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QUARTERLY REVIEW of SURGERY

Vol. 5 No. 1 February 1948

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FOREWORD

THE QUARTERLY REVIEW OF SURGERY provides a systematic plan, organized for the purpose of making available a concise and authoritative presentation of the current progress, trends, and attitudes in all branches of surgery. Compiled from every dependable source, this plan covers all state, national, and special journals as well as the bulletins, reports, etc., of the clinics and hospitals. Presented briefly but without sacrificing any essential detail, these highly significant data are further enhanced by comments of the members of the Editorial Board, based upon the summarizing their own clinical experiences as well as those of other recognized authorities. All data are classified and published under the following headings:

1. Anesthesia and Analgesia
2. Preoperative and Postoperative Therapy
3. Surgical Technic
4. Surgical Infections
5. Tumors
6. Neurosurgery
   7. Skull
   8. Brain
   9. Spine and Spinal Cord
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   11. Sympathetic Nervous System
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It is believed that this plan will assist the reader to locate quickly the articles of current interest and will prove most helpful in making readily available the references necessary in the compilation of bibliographies on surgical subjects. Under each classification, immediately following the abstracts, there will be published references to current articles not abstracted.

The suggestions and comments of our readers will be gratefully received.

HENRY N. HARKINS, M.D., *Department of Surgery*
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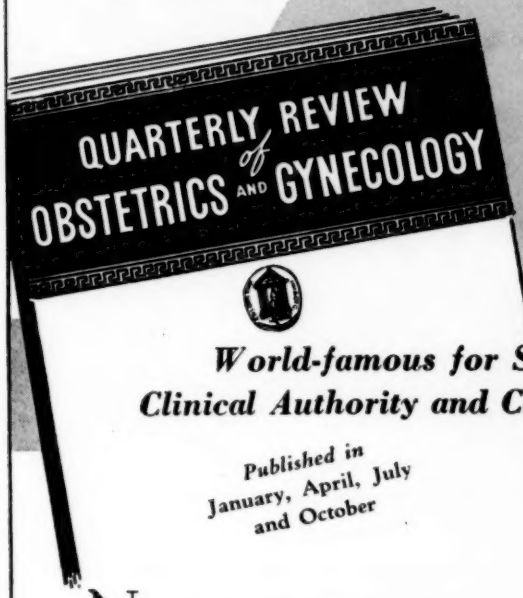

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QUARTERLY REVIEW of SURGERY

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1. Anesthesia and Analgesia

DIRECT LOCAL INTRAVENOUS ANESTHESIA OF THE EXTREMITIES (*Pryamaya mestnaya vnutrivennaya anesteziya na konechnostyakh*).

Ya. B. Ryvlin, Army Hospital, Leningrad District, U.S.S.R. Khirurgiya 10-20, No. 6, 1947.

The author's simplified modification of Beer's technic obviates the danger of intoxication, permits fuller and, wherever possible, complete anesthesia, and also prevents impairment of the patient's general health during or after operation. The direct method worked out includes the following steps: (a) the limb is kept in a raised position and an elastic bandage is applied at some spot far above the injection point. The bandage is made sufficiently tight to stop the arterial circulation; (b) novocaine (0.25 per cent solution) is injected into the subcutaneous vein in a dose of 100 to 200 cc. This is followed at once by 50 to 100 cc. of physiologic salt solution.

The vein responds to novocaine by dilation, paralysis and loss of elasticity (decreased tonus). The paralysis is extensive, reaching the walls of the tiniest capillaries. Since the solution is injected under pressure, the anesthetic enters the tissues through the intercellular slits of the capillaries.

In the tissues the novocaine solution enters the venous system of the nerves which serve the involved limb, and in addition penetrates the nerve tissue itself. Thus a total block of all nerves and their endings is achieved, which involves not only the central but also the sympathetic and parasympathetic systems. However, the spreading of the anesthetic is limited by the bandage above which it cannot reach. By extending the time interval between injection and operation, the degree of anesthesia is increased and the loss of motor as well as sensory activity becomes more pronounced. The optimal ratio of novocaine (0.25 per cent) to physiologic salt solution is 2:1 by volume.

At present a 250 to 300 cc. volume of this anesthetic is introduced into the legs without the slightest sign of intoxication. A 200 cc. volume is injected into the arms. The length of time the bandage is kept on has no effect. Limb sensitivity is fully restored on removal of bandage. The advantages of this local anesthesia are:

1. Complete paralysis of the limb and loss of sensitivity is reached twenty-five to thirty minutes after injection, this condition lasting until the end of operation. Full return of the motor and sensory activity follows immediately upon removal of the bandage.

2. Small amounts of the drug are used and a minimal trauma of the tissues is inflicted by the needle.

3. A very clear anatomic picture of the region which is to be operated on is achieved.

4. The anesthetic reaches the depth of the wound, where the scar tissue is located. Such penetration is impossible where infiltration anesthesia is used.

5. Gradual relaxation of the muscles and tendons, which cannot be achieved by infiltration.

6. As a result of these advantages, a broadening of the field of operation is obtained.

The majority of operations were performed both on soft tissues and bones. Of 54 anesthesias 24 gave an absolute effect and 30, a good effect (pain very slight, and felt only at the beginning of operation). In another group of 23 the same anesthesia as above was done by intra-arterial route. Here the depth of penetration was no better, the effect was absolute in most cases (14), good in 8, and partial in 1 patient. Comparison of results led to the conclusion that the intravenous route is much simpler and does not require a very exact knowledge of vascular topography, hence is safer for the patient.

The author has applied the direct method of novocaine block to 157 cases of inflammations, including fresh gunshot and other types of wounds, traumatic and postoperative shocks, burns, spontaneous gangrene (together with massive blood transfusions), etc. Success in the latter group was due to two factors: (a) stimulation of collateral blood circulation through pressure of the large volume of transfused blood; (b) mobilization of collateral circulation routes produced by the direct intravenous anesthesia. This pheno-

menon lasted one and one-half to three hours after operation. The postoperative temperature in the limb operated on was high (skin), the effect lasting twenty-four hours. 3 tables. 6 figures.

NEUROLOGICAL COMPLICATIONS AFTER SPINAL ANESTHESIA.

Gunnar Thorsen, Central Hospital, Orebro and Serafimer Hospital, Stockholm, Sweden. Acta chir. Scandinav. 95:5-272, Suppl. 121, 1947.

Questionnaires filled in by 100 patients who had received a lumbar puncture and 2,493 patients subjected to spinal anesthesia were studied to determine whether central nervous system complications followed spinal anesthesia immediately or later. The symptoms included headache, dizziness, diplopia, pains in the back, weakness and numbness in the legs, disturbed bladder and rectal function and other troubles.

Headache is the most frequent symptom and is primarily caused by either hypotension or hypertension of the cerebrospinal fluid. Hypotension is the usual cause and results from leakage or a dural defect caused by the puncture, size of the defect being dependent upon the caliber, direction and bevel of the needle. It is largely dependent upon position of the body, usually commencing or being aggravated by the erect position and disappearing in the Trendelenburg position. It is treated by lying down. Analgesics have little effect, but the pressure may be restored by intradural injections of normal saline solution in serious cases.

Dizziness is dependent upon position. It is characterized by absence of a rotation feeling in a certain direction and frequently accompanies headache. It may be prevented by using the weakest possible anesthetic solution. Diplopia is a frequent complication which occurs about the seventh or eighth day after anesthesia and is more common on the right side. It usually returns to normal in a few days or months or may persist. There are usually accompanying symptoms of hypotension. The symptoms are blurred or colored vision, confluent letters, sloping lines, etc.

Manifest cerebral injuries such as epilepsy, paresis, hemiplegias, etc., result from cerebral anoxia and are rarely considered to be sequels of the anesthetic. Experiments were made to determine the effect of spinal anesthetic agents upon the intraspinal nerve substance and its membranes. Injuries caused by the spinal puncture are usually immaterial. They are usually the result of anatomic anomalies or unskilled technic. Infection causes septic meningitis about once in 800 cases. Injuries caused by the anesthetic agent are produced by peripheral penetration, an intramedullary injection, or other causes. They have a characteristic prompt onset and are often fatal.

This investigation showed the anesthetic agent to be the chief cause of so-called medullary complications. The principal factor is their neurotoxic and myelolytic effect and secondly their irritating effect on the meninges.

These studies indicated that neurologic complications occur so frequently and with such intensity and duration that spinal anesthesia should only be

used for major, complicated operations requiring complete muscular relaxation or a contracted intestine. 478 references. 32 tables. 6 figures.

THE USE OF CURARE IN ANESTHESIA.

Edward C. Allen and Urban H. Eversole, Lahey Clinic, Boston, Mass.
New England J. Med. 236:523-26, Apr. 10, 1947.

The value of curare in anesthesia is that it produces muscular relaxation; it acts peripherally at the myoneural junction, although the exact nature of this mechanism is not completely understood. Curare is given intravenously, the usual initial dose being 60 mg.; supplementary doses of 40 to 20 mg. may be given if necessary. The effect of each dose on the respiratory excursions must be carefully watched, and the anesthetist must always be prepared to treat respiratory depression or apnea promptly.

Cyclopropane has proved to be an excellent anesthetic agent to use in combination with curare. Curare is also used to advantage with nitrous oxide and ethylene. Larger doses of curare are employed with these gases, and special care must be taken to guard against respiratory depression. With ether, smaller doses of curare should be employed than with other anesthetics, as ether itself acts on the myoneural junction. When curare is combined with pentothal, although pentothal is also a respiratory depressant, the total dosage of pentothal necessary is reduced by the concomitant use of curare. If the anesthetist is prepared to deal with any respiratory depression or obstruction, there is little danger in this combination. Curare has also been employed to advantage with spinal anesthesia; when continuous spinal anesthesia is employed, the total dosage of the spinal anesthetic needed is often materially reduced by the administration of curare near the end of the operation.

Curare has been found to be of advantage with cyclopropane anesthesia in operations for massive hemorrhage from gastric or duodenal ucler, for which spinal anesthesia is contraindicated because of marked hypotension. Cyclopropane with a sufficiently high oxygen content prevents hypoxia, while the curare gives excellent relaxation in such cases.

The combination of pentothal and curare has proved of value for bronchoscopies and esophagoscopies; this obviates the use of deep ether anesthesia for difficult endoscopies. A thorough cocainization of the pharynx and larynx is done before either drug is given. Curare is usually given first; when the patient is unable to raise the head or the arms from the table, pentothal is given. For more extensive operations, including laminectomies, splanchnicectomies and some intrathoracic operations, a combination of curare, penthothal and nitrous oxide has been employed. This permits the use of electrosurgical apparatus, which cannot be employed safely in the presence of inflammable agents. 27 references.

References to Current Articles

Headache After Spinal Anesthesia and a Technic for Lessening Its Frequency. C. Franksson and T. Gordl, The Karolinska Hospital, Stock-

holm, Sweden. Acta chir. Scandinav. 94:443-54, Fasc. 5, 1946.
In a consecutive series of 362 cases (low spinal anesthesia) the incidence of headaches was 13 per cent when a 5 per cent Etoin solution was injected using a needle 0.7 to 1.0 mm. in diameter. According to the authors, these headaches are due mainly to the leakage of the cerebrospinal fluid into the epidural space, as a result of puncture. In autopsied material puncture openings were shown to be still open two weeks after the anesthesia. The authors' method for reducing this leakage to a minimum proved very effective. An Antoni-size needle, 0.5 mm. in diameter, equipped with an introducer, must be used; also, heavy Decicain as anesthetic, which is a pontocain-glucose solution of specific gravity equal to 1.040. In 100 cases thus anesthetized no headaches were recorded. No prophylaxis as to position was used and 16 per cent of patients were out of bed the same day. 26 references. 2 tables.

Intravenous Administration of the Morphine-Scopolamine-Caffeine Mixture in Surgical Practice (*O vnutrivennom primenenii smesi morfin-skopolamin-kofein v khirurgicheskoi praktike*). V. M. Zakharin. Khirurgiya 33-35, No. 1, 1947. Extensive experience both before and during World War II has led to the conclusion that the mixture of 0.015 morphine, 0.0005 scopolamine and 0.2 caffeine in 1.2 to 1.5 cc. of water is to be recommended especially for patients 75 to 92 years of age. One hour before the operation the patient is given subcutaneously 0.01 to 0.15 morphine. Thirty minutes later the mixture is introduced subcutaneously. No complications of deaths are on record as resulting from this treatment. Ready ampules may be obtained from the Sanitas plant, Kaunas, Lithuania, U.S.S.R. Details of the pharmacologic experiments are given in Medicina (Kaunas) numbers 8-9, 1940.

The First Printed Description of the Use of Chloroform. K. F. Russell, Royal Australian College of Surgeons, Melbourne, Australia. Australian & New Zealand J. Surg. 16:235-37, April 1947.

Experiences with Curare in Anesthesia. Sidney C. Wiggin, Philip E. Schultz and Peter Saunders, Tufts College Medical School and Boston City Hospital, Boston, Mass. New England J. Med. 236:526-29, Apr. 10, 1947.

The Effect of Mechanical Artificial Respiration Upon Maintenance of the Circulation. Samuel Alcott Thompson and Edward Ernest Rocey, New York Medical College, Flower and Fifth Avenue Hospitals and the Metropolitan Hospital, New York, N. Y. Surg., Gynec. & Obst. 84:-1059-64, June 1947.

Circulatory and Respiratory Distress from Extreme Positions on the Operating Table. H. C. Slocum, E. A. Hoeflich and C. R. Allen, University of Texas School of Medicine, Galveston, Tex. Surg., Gynec. & Obst. 84: 1051-58, June 1947.

Some Remarks on Novocaine Blockade (*Neskol'ko zamechanii o novokainovom bloke*). M. M. Gorbenko, The Leovo District Hospital, Moldavia, U.S.S.R. Khirurgiya 41-47, No. 6, 1947.

Intrapleural Hexenal Narcosis in the Light of Experimental Studies (*Intraplevral'nyi geksenalovyi narkoz v experimental'nom osveshchenii*). K. T. Ovnatanyan, The State Medical Institute of North Osetiniya, U.S.S.R. Khirurgiya 23-28, No. 3, 1947.

Pathological Aspects of Death Following Major Surgery. An Analytical Study of Postmortem Examination of 57 Cases. Frank H. Tanner and George Cullen, Lincoln Hospital, Lincoln, Neb. Surg., Gynec. & Obst. 85:446-52, October 1947. In this analysis no deaths were found to be due primarily to anesthesia, a few to purely operative or technical factors; most deaths were due to nonoperative factors. 2 references. 12 tables.

Necrobiotic Properties of Novocaine (*Nekrobioticheskie svoistva novokaina*). A. A. Troitskiĭ, The Gor'kiĭ All-Union Institute of Experimental Medicine, U.S.S.R. Khirurgiya 18-23, No. 3, 1947.

Failure of Oil-Soluble Anaesthetics to Give Prolonged Analgesia. Michael Kelly, University of Melbourne, Melbourne, Australia. Lancet 1: 710-11, May 24, 1947.

Technique of Laryngeal Anaesthesia. R. B. Macintosh, University of Oxford, Oxford, England. Lancet 2:54-55, July 12, 1947.

Paralysis of the Abducens Nerve Following Spinal Anesthesia. Report of a Case. Anthony T. Rose and Samuel Pritzker, Mt. Sinai Hospital, Philadelphia, Pa. New England J. Med. 237:52, July 10, 1947.

Annual Report For 1946 Of The Section On Anesthesiology. Including Data and Remarks Concerning Blood Transfusion And The Use of Blood Substitutes. I. John S. Lundy, Edward B. Tuohy, Charles Adams, Lloyd H. Mousel, Thomas H. Seldon and John W. Pender. Proc. Staff Meet., Mayo Clin. 22:357-68, Aug. 20, 1947.

Remote Control of Closed Circuits in Anaesthesia. Norman R. James, Rooksdown House, Park Prewett Hospital, Basingstoke England. Brit. M. J. 4521:345, Aug. 30, 1947.

Graduate Education in Anesthesiology. E. A. Rovenstine and E. M. Papper, New York University College of Medicine, New York, N. Y. J.A.M.A 134:1279-83, Aug. 16, 1947.

Pentothal Sodium Intravenous Anesthesia in Major Surgical Interventions on the Genito-Urinary Organs. Its Particular Value in the Poor Operative Risk Patient. Charles Pierre Mathé and Mariá Helena Ramirez Jaime, Southern Pacific General Hospital and St. Mary's Hospital, San Francisco, Calif. J. Urol. 58:163-70, September 1947.

Use Of Adrenalin to Prolong Spinal Analgesia. Sylvan M. Shane and Eduardo T. Ruiz, Baltimore, Md. Am. J. Surg. 74:189-91, August 1947.

Epinephrine In Cardiac Resuscitation. Henry K. Beecher and Robert R. Linton, Boston, Mass. J. A. M. A. 135:90, Sept. 13, 1947.

Apparatus For Refrigeration Anesthesia. Edmundo S. C. Batalha, São Paulo Brazil. Am. J. Surg. 73:629-30, May 1947.

Caudal Trans-Sacral Anesthesia In Rectal Surgery. Its Routine Use in More

Than 2,000 Cases. Chelsea Eaton, Berkeley Hospital, Oakland, Calif. Am. J. Surg. 73:540-43, May 1947.

Refrigeration Anaesthesia. E. S. R. Hughes. Brit. M. J. 4508:761-64, May 31, 1947.

A Taper Type Inflator for Anaesthetic Masks. A. Owen-Flood, Hornsey, London, England. Brit. M. J. 4512:939, June 28, 1947.

Convulsions During Inhalation Anesthesia. Theodore L. Hyde, The Dalles, Ore. Ray C. Schwegler, Lawrence, Kan. Am. J. Surg. 74:33-38, July 1947.

Topical Anesthesia. Effect on Tissue Regeneration. Frank C. Combes, Morris Reschke, New York University College of Medicine, Bellevue Hospital, New York, N. Y. and Rose B. Saperstein, Los Angeles, Calif. Am. J. Surg. 74:45-48, July 1947.

2. Preoperative and Postoperative Therapy

EARLY MOBILIZATION OF PATIENTS AFTER MAJOR SURGICAL PROCEDURES.

Nelson W. Cornell and David T. W. Lin, New York Hospital, New York, N. Y. Surg., Gynec. & Obst. 85:294-300, September 1947.

Results of early postoperative ambulation after major operations in 266 patients are compared with results in 221 major operations with late ambulation. The procedure of early ambulation is described. The patient is gotten up twenty-four hours postoperatively regardless of the type of operation. He is raised to a high Fowler's position, legs are swung over the side of the bed and he is assisted to stand and to a convenient chair. He remains there fifteen to thirty minutes and then returns to bed. This procedure is done twice the second day after which the time out of bed and length of walks are gradually increased until he can walk to the bathroom unassisted on the fifth to seventh day. All except stay sutures are removed the fifth or sixth day and these usually the eighth day. Appendectomy and thyroidectomy cases are sent home the fifth to seventh day and others the seventh to tenth day postoperatively.

Early ambulation has been shown to be physiologically sound. The diaphragm is pulled down and the lungs better aerated when standing while deep breathing and forced coughing remove mucous plugs from the bronchi. The muscles do not atrophy from disuse and the circulation is increased in early exercise. The patient does not require catheterization nor use of the bedpan and feels better earlier. Cases of early ambulation are discharged about four days sooner than the late group. The late ambulation cases had 8.5 per cent of complications as compared with 3.8 per cent of early cases. There was no significant difference between the two groups as regards causes

of death. Incisional hernia occurred in 0.8 per cent of early ambulation cases and 1.9 per cent of late cases. Early ambulation has definite physiologic, psychologic and economic advantages. 9 references. 7 tables. 2 figures.

(*The editor has been using this method for many years, starting it with appendectomies; male patients out of bed the first day, home on the third; female patients usually home on the fifth day. For the last six years, all types of cases have been getting out of bed early, with the same results that the author quotes.*—J. H. F.)

References to Current Articles

Treatment of Acute Uremia by Peritoneal Lavage. Report of a Case. Robert W. Buckley (Major, M.C., A.U.S.) and Roger A. Scholten (Capt., M.C., A.U.S.). New England J. Med. 237:431-34, Sept. 18, 1947

The Surgical Significance of Hemoglobin Deficiency in Protein Depletion. Champ Lyons and R. S. Mayerson, Tulane University School of Medicine, New Orleans, La. J. A. M. A. 135:9-11, Sept. 6, 1947.

The Importance of Blood in Preoperative and Postoperative Treatment. Thomas H. Seldon. Surg., Gynec. & Obst. 84:1124-25, June 1947.

A Study of Protein Hydrolysates, Ossein Gelatin and Glucose in Parenteral Nutrition. C. E. Koop, Cecilia Riegel, Rozanne P. Grigger and M. T. Barnes, Schools of Medicine and University Hospital, University of Pennsylvania, Philadelphia, Pa. Surg., Gynec. & Obst. 84:1065-70, June 1947.

Hepatorenal Syndrome With Recovery. A. F. Perl, Provost, Alta., Canada. Canad. M. A. J. 57:290-92, September 1947.

Postoperative Pulmonary Atelectasis. Alfred L. Kruger (Major, M.C., A.U.S.), Phillip S. Marcus (Major, M.C., A.U.S.), Miles T. Hoerner (Col., M.C., A.U.S.) A.A.F. Regional Hospital, Keesler Field, Miss. Am. J. Surg. 73:531-39, May 1947.

The Use of a Mixture of Pure Amino Acids in Surgical Nutrition. Sidney C. Werner, Columbia University and the Presbyterian Hospital, New York, N. Y. Ann. Surg. 126:169-94, August 1947.

Intravenous Oxygen and Pulmonary Embolism. Jack H. Sanders and Isadore M. Isoe, University of Illinois, Chicago, Ill. Ann. Surg. 126:208-14, August 1947.

Anuria. Tabulo Interstitial Extravasation. 1. Renal Capsulotomy. Preliminary Report. Frederick A. Reuter, The George Washington University School of Medicine, Washington, D. C. J. Urol. 58:97-99, August 1947.

An Oxygen Conveyer. A Toy Ballon. Alfred W. Adson, Mayo Clinic, Rochester, Minn. J. Neurosurg. 4:396-97, July 1947.

The Effect of the Rate of Administration of Amino Acid Preparations and Blood Amino Acid Nitrogen Level on the Production of Nausea and Vomiting. Charley J. Smyth, Andrew G. Lasichak and Stanley Levey, Wayne University College of Medicine, Detroit, and The Wayne County General Hospital, Eloise, Mich. J. Lab. & Clin. Med. 32:889-94, July 1947.

Discontinuous Intravenous Infusion and Transfusion. Advantages and Technique. Hamilton Bailey, Royal Northern Hospital. Brit. M. J. 4521: 333-34, Aug. 30, 1947.

Wound Disruption and Early Ambulation. John C. Burch and Cloyce F. Bradley, Nashville, Tenn. Ann. Surg. 125:768-77, June 1947.

Observations on Early Postoperative Rising. Thomas F. Keyes, Marysville Clinic, Marysville, Calif. Am. J. Surg. 74:192-93, August 1947.

The Clinical Use of Anticoagulants. Report of Treatment with Dicumarol in 1,686 Postoperative Cases. Chairman's Address. Edgar V. Allen, Mayo Clinic, Rochester, Minn. J. A. M. A. 134:323-29, May 24, 1947.

Amino Acids and Hydrolyzed Protein. Robert Elman. Surg., Gynec. & Obst. 85:113-14, July 1947.

Medical Management of the Elderly Surgical Patient. D. M. Green, University of Washington School of Medicine, Seattle, Wash. Northwest Med. 46:597-600, August 1947.

3. Surgical Technic

References to Current Articles

Biopsy Drill Punch. Hayes Martin, Memorial Hospital, New York, N. Y. Am. J. Surg. 74:107-108, July 1947.

An Underwater Drainage Bottle Stand. Arthur S. W. Touroff (Col., M.C., A.U.S.) 12th Hospital Center, U.S. Army. Surgery 22:558-61, September 1947.

Continuous, Vertical Mattress Suture. Its Application and Usefulness. J. A. Davis, Brooklyn, N. Y. Am. J. Surg. 73:576-79, May 1947.

Self-Retaining Skin Hooks. Herbert J. Riekert and Raymond K. J. Luomanen, New York, N. Y. Am. J. Surg. 74:382, September 1947.

A Simple Method of Making Photographic Records Under Sterile Conditions. Franc D. Ingraham and Cully A. Cobb, Jr., The Children's Hospital and Harvard Medical School, Boston, Mass. J. Neurosurg. 4:293-97, May 1947.

An Instrument for Recording Multiple Pressures in Man. George S. Edwards, University of Southern California, Los Angeles, Calif. J. Lab. & Clin. Med. 32:921-28, July 1947.

The Stability of Thrombin, Penicillin, or Streptomycin, in the Presence of Gelatin Sponge, Oxidized Cellulose or Each Other. John T. Correll and E. C. Wise, The Upjohn Company, Kalamazoo, Mich. Surg., Gynec. & Obst. 85:211-13, August 1947.

Sutures, Wound Healing and Early Ambulation. Edward B. Speir, Seattle, Wash. Northwest Med. 46:368-69, May 1947.

4. Surgical Infections

THE MECHANISM OF INFECTION IN CHRONICALLY RELAPSING STAPHYLOCOCCUS DISEASES. CLINICAL AND BACTERIOLOGIC INVESTIGATION, WITH SPECIAL REFERENCE TO FURUNCULOSES AND THEIR COMPLICATIONS. (*Über den Infektionsmechanismus bei chronisch rezidivierenden Staphylokokkenkranheiten. Eine klinisch-bakteriologische Untersuchung speziell über die Furunkulose und ihre Komplikationen*).

M. Lulamaa, University of Helsinki, Helsinki, Finland. Acta chir. Scandinav. 94:291-319, No. 3/4, 1946.

Pathogenicity of staphylococci found in the pus of 150 panaritium patients was compared with that of the same microbes isolated from the skin and nose mucosa of 100 healthy subjects. Cultures of staphylococci taken from furunculous patients and from those with other types of relapsing staphylodermias (60 in all) were also tested. Pigment formation, mannite decomposition, coagulase and hemolysis reactions (positive), were selected as criteria.

The bacteria isolated from the pus samples *in vitro* contained only 4 per cent of nonpathogenic forms, while 93 per cent had at least two pathogenic properties. In the group of 150 acute inflammatory conditions (panaritium, etc.) 60 per cent harbored pathogenic staphylococci. In 60 chronic cases (staphylodermias, staphylodermatitis complicating osteomyelitis, carbuncles following exudative pleurisy, etc.) 76 per cent showed pathogenic bacteria. Among the healthy subjects about 50 per cent were carriers of pathogenic staphylococci identical with those found in furuncles.

The relative proportion of pathogenic and nonpathogenic strains in the healthy skin was 21 per cent and 57 per cent; in the nose, 46 per cent and 41 per cent. Among the chronic cases 40 per cent were diabetics, cachexia, pseudodiabetes and other wasting diseases. Infection was due to lowered resistance. The disease was a predisposing factor. The virulence of these strains was somewhat higher than in acute cases. In one and the same patient the strains did not vary from one time to another, or from one furuncle to another.

Therapy of chronic cases should be based on chemotherapy, polyvalent staphylococcus vaccination (50 to 60 per cent recoveries), and especially on reduced chemotherapy for reinfection. This is possible if antiseptics are used for skin massage, such as 70 per cent alcohol for twenty minutes daily (Price. J. A. M. A. 124:1189, 1944). Various aseptic measures should likewise be resorted to. 42 references.

ACUTE SUBPECTORAL ABSCESS. A SURGICAL EMERGENCY.

Knowles B. Lawrence and Thomas J. Anglem, Massachusetts Memorial Hospitals, Boston, Mass. New England J. Med. 237:390-95, Sept. 11, 1947.

A series of 6 cases of acute subpectoral abscess or suppurative lymphadenitis is reported. This condition is usually secondary to minor infections of the upper extremity. The essential pathology consists of an invasion of the infraclavicular lymph nodes by highly virulent bacteria draining from the primary focus. Necrosis and suppuration develop in a few days. This infected mass is enclosed in a tough fascial envelope so that pus dissects beneath the scapula and into the upper arm or toward the mediastinum before breaking into the axilla. The pain in the shoulder and subpectoral area is mild at first but soon becomes extremely severe and accompanied by the symptoms of a general infection which is more toxic when caused by streptococci. Local fluctuation is a late and uncertain symptom because of the slowness with which the nodes suppurate and the pus spreads.

This is a serious condition which cannot be controlled by chemotherapy. Surgical drainage is essential. Early incision and drainage of the subpectoral and intraclavicular spaces is the treatment for this condition whether there is a definite abscess or only an edematous mass of glands. This promptly relieves pain and toxic symptoms whereas delay permits more widespread tissue destruction with a toxic patient and possible spread of infection to the pleural cavity, mediastinum and blood stream. The axillary fascia is incised along its junction with the lateral margin of the pectoralis major muscle and breaking into the abscess by blunt dissection which is carried up along the axillary vessels to the anterior scalenus muscle. The postoperative scar is made smaller by using a slightly curved skin incision at right angles to the anterior axillary fold and not parallel to it. Counterincisions and Penrose drains are used for drainage as indicated. 7 references. 4 figures.

GAS GANGRENE.

W. A. Altemeier and W. L. Furste, University of Cincinnati General Hospital, Cincinnati, Ohio. Surg., Gynec. & Obst. 84:507-23, June 1947.

The etiologic factors of gas gangrene are predisposing, exciting and bacterial. Location of the wound is important, the large muscle masses of the thigh, buttock and calf being especially susceptible. The infection occurs most frequently in irregular wounds with extensive devitalization of tissues and containing foreign bodies. Delayed or improper surgical care may be an important exciting cause. A great variety of gas producing anaerobic bacteria are responsible for the infection, the Clostridium welchii producing about 80 per cent of cases. This produces a great deal of gas and seven toxins of which alpha, theta and beta are the most important. The first two are hemolytic while the third is necrotizing. Pathogenic strains of this organism are found everywhere, soil and wool clothing being the most important sources of contamination. It frequently occurs in wounds without producing

symptoms of gas gangrene, the incidence of clinical gangrene averaging 1.76 per cent in 187,936 major open wounds. This is apparently the result of several factors, chiefly a lack of arterial damage and devitalized tissue or an attenuation of the organism by unfavorable surroundings.

There is an incubation period of a few hours to four days or more, symptoms usually developing the second day. The extreme virulence of the disease is now believed to be caused by toxins from degenerating tissues as well as from bacteria. The characteristic symptomatology is described. Early differential diagnosis is aided by serial roentgenograms and bacteriologic examinations but is difficult.

Early and adequate surgery is the best prophylactic and curative treatment. The necessity for radical prophylactic debridement of wounds is stressed. Wide opening of the wound and thorough excision of infected muscle is indicated as soon as the diagnosis is made. Valuable time cannot be wasted awaiting a confirmed diagnosis. Prompt surgical exploration should be carried out in any wound when gas gangrene is suspected. Serotherapy and chemotherapy are of doubtful prophylactic or curative value. They may aid but do not replace surgery. Penicillin has been showed greatly superior to the sulfonamides and streptomycin and has given encouraging results when massive doses are used with surgery. Experimental evidence has indicated that 8 million or more units daily are definitely beneficial. Doses of 1,000, 000 units every three hours have been recommended for severe infections and have been given without toxic effects. 185 references. 5 tables.

(*While we have had no experience with roentgen ray therapeusis for this condition, several clinicians have reported beneficial results.*—J. H. F.)

STREPTOMYCIN. BACTERIOLOGY, PHARMACOLOGY AND CLINICAL USES.

Tom F. Paine, Roderick Murray and Maxwell Finland, Boston, Mass. New England J. Med. 236:748-60, May 8 & 15, 1947.

Streptomycin has proved most effective in acute tularemia and in cases of meningitis due to gram-negative bacilli, especially Hemophilus influenzae. It is useful in most gram-negative bacillus infections, particularly those of the urinary and respiratory tracts. The results in some forms of tuberculosis are encouraging, and it is at present the best available chemotherapeutic agent for tuberculous infections. Typhoid fever, Salmonella infections and brucellosis have not responded favorably. It may be useful as a second line of defense in some cases of coccal infections that prove insensitive to the sulfonamides and penicillin or develop fastness to these agents. The greatest limitation to the clinical usefulness of streptomycin is the readiness with which most organisms develop resistance to it.

Streptomycin is relatively nontoxic. The most serious untoward effect that has been noted is a disturbance in vestibular function. This effect has been observed mainly following the use of large amounts of the drug over prolonged periods.

Streptomycin is a valuable addition to the group of agents that are used for the definitive treatment of infectious diseases, particularly since it is effective in some infections that are influenced little if at all, by other available agents. 291 references.

INVESTIGATION OF THE BACTERIAL FLORA, DISINFECTION AND DISINFECTANTS OF THE SKIN.

E. Saarenmaa, University of Helsinki, Helsinki, Finland. Ann. chir. et gynaec. Fenniae 35: Suppl. 4, 150 pp., 1946.

The increased number of operating room infections noted during World War II prompted this investigation. The disinfecting methods then in use were the same as had been applied years ago, hence new methods were needed.

The normal skin flora, consisting chiefly of staphylococci, will grow where normal physiochemical properties of the skin are present. Pathologic or temporary flora, on the other hand, appears under exceptional conditions.

The author has examined 4,712 staphylococci strains from normal skin and found all of them but 1 per cent nonpathogenic (grayish-white colonies on blood agar). Tests by the author have shown that disinfection of the operative field with an alcoholic solution of iodine (3 to 5 per cent) is enough to kill the surface flora and decrease the deep skin flora. Sterility, however, was achieved in 22 per cent only (skin surface). The outcome of operations in most of the nonsterile wounds was good (healing). Still, the necessity for deep skin disinfection remains, which is a physiochemical problem as well as a bacteriologic one.

In wound healing aseptic conditions can be created only by preventing contact with infection not alone during but also after the operation. Hence toxicity, irritating effect on the skin, color, etc., are of importance in a disinfectant. Low surface tension, fat solubility, diffusion rate, wetting and high dielectric constant are important in choosing the solvent for disinfectants. As shown by this author, the latter property, when high, increases the potency of the disinfectant. Aqueous solutions (high dielectric constant) meet all of the above requirements. Alcohol, however, should be given preference as solvent for skin disinfectants, best in combination with ether or acetone. Iodine and chloramine, especially the latter, are best disinfectants when dissolved in alcohol (as established by the author through comparison with many other disinfectants).

By-products of the tar and turpentine industry proved unsuitable as solvents or disinfectants. Distillates of pre-oil from turpentine processing have a disagreeable odor, among other adverse properties. Diacetyl obtained from pre-oil is a disinfectant when used in high concentrations, specifically for spores of bacteria. Thus, the author succeeded in killing spores of Bacillus subtilis in ten hours. In low dilutions (2 per cent aqueous solution) it has less potency for vegetative bacteria than 1 per cent phenol.

Carvacrol and its chlor derivative obtained from cymol (cellulose industry) are very promising as disinfectants. A 0.02 per cent concentration (1:5,000) of chlorcarvacrol in a water emulsion of castor oil soap was shown by the author to be very potent (the staphylococci were killed in 5 minutes). On Bacillus coli the effect varied depending on the solvent used. In the above emulsion a 2 per cent concentration was needed (1:50) to kill B. coli in five minutes.

Chlorcarvacrol is nonirritating to the skin, has a pleasant odor and is potent as skin disinfectant when used in a 1 to 2 per cent alcoholic solution (70 per cent alcohol). Other formulas are likewise efficient: (1) chlorcarvacrol or carvacrol 1.0 to 2.0; ethyl alcohol (96 per cent) 50.0; acetone or ethyl ether 10.0; water 40.0; (2) chlorcarvacrol or carvacrol 1.0 to 2.0; stearic acid 1.0; benzene 77.0; water 20.0, NaOH (15 per cent) 3.0 (after Gelinsky).

(*For the past ten years a preoperative five minute scrub with sterile cotton sponges and neutral soap, without the use of any disinfectants or antiseptics whatever, has given, almost universally, clean wounds with no evidence of skin irritation.*—J.H.F.)

NOMA OF THE CHEEK TREATED WITH PENICILLIN (*Ein mit Penicillin behandelter Fall von Noma der Wange*).

A. R. Klossner, University of Turku, Turku, Finland. Ann. chir. et gynaec. Fenniae 35:5-19, No. 1, 1946.

A girl student, 17, developed a noma of the cheek following a tooth extraction. The wound was 5 by 6 cm., extending to the os zygomaticum and maxilla. Hemolytic streptococcus, the only pathogenic microbe present, suggested bacterial origin of the disease. The nature of the infection could not be established. The predisposing factors were: a weak constitution, congenital heart defect and possibly a typhus infection preceding the last illness. Neosalvarsan (0.3 by 2) and sulfathiazole were of no help. Penicillin (10,000 units every four hours, a total of 270,000 units in twenty-seven injections) produced an immediate change for the better. The offensive smell and necrotic tissues disappeared. The gangrenous disintegration was checked and the wound reduced to 1 by 2 cm. While treatment is still continued, it is already evident that penicillin is a specific remedy against noma. 21 references. 6 figures.

(*In wounds of this type, chlorophyll has been of the greatest value.*—J.H.F.).

STREPTOMYCIN IN THE TREATMENT OF DRAINING TUBERCULOUS SINUSES.

Benjamin L. Brock, Veterans Administration Hospital, Oteen, N. C.
J. A. M. A. 135:147-49, Sept. 20, 1947.

One of the most impressive results in the treatment of tuberculosis in man by streptomycin has been obtained following its use in draining tuberculous sinuses.

Eleven Negro patients and 1 white patient, the majority of whom had multiple, draining, tuberculous cutaneous sinuses, have been treated with streptomycin in the Veterans Administration Hospital at Oteen, N. C. There were sixty draining sinuses in the 12 patients reported in this series. The average length of time these sinuses existed prior to the institution of streptomycin therapy was twenty-four months. All but 2 of the patients had sinuses which originated in bone. In 1 of the 2 a sinus developed following laparotomy; in the other the sinuses originated in the ischiorectal area. All were proved to be of tuberculous origin, either by biopsy or culture.

A daily dose of 1.8 Gm. streptomycin, 0.3 Gm. every four hours, was given intramuscularly. Six of the patients received treatment for ninety days. The remaining 6 received treatment for one hundred and fifty days.

Eleven of the 12 patients showed outstanding clinical improvement; namely, a sense of well being, an increase in appetite, and a gain in weight. The average gain in weight has been 15 pounds. Those who were febrile at the beginning of therapy rapidly became afebrile.

Certain toxic reactions were observed regularly. None was severe enough, however, to justify the discontinuation of streptomycin therapy. The commonest clinical reactions have been those of headache and dizziness. The average length of time which elapsed before the onset of the so-called vestibular symptom of dizziness was between three and four weeks. The caloric test has regularly revealed a hypoirritability which was apparently equal in both ears and persisted along with the dizziness after the cessation of treatment. Other reactions have been, namely, an elevation of the temperature, a flushing of the skin, an eosinophilia and the appearance of transient casts in the urine. The streptomycin concentration blood serum was between 10 and 20 micrograms per cubic centimeter in all cases.

There has been impressive evidence that closure of the sinuses is prompter when free drainage is present. Where drainage is not free the area should be incised, and where necrotic bone is present, as for example in a rib or sternum, the necrotic material should be removed. Large cold abscesses likewise should be evacuated by open drainage in conjunction with streptomycin therapy.

Radiographic evidence of extensive regeneration of bone has been observed in the orbital portion of the frontal bone in one patient.

Nine (15 per cent) of the 60 sinuses closed within one to four weeks, and 9 (15 per cent) closed within six to eight weeks after administration of streptomycin was begun. Thirty (50 per cent) closed between ten and twelve

weeks, and 11 (approximately 20 per cent) closed within thirteen to twenty weeks after streptomycin was instituted. Only 1 sinus of the original 60 continued to drain four months after incision of the perineum.

Of the other sinuses the longest time which has elapsed since closure is eight months, the shortest time two months and the average time four months 4 figures.

Author's abstract.

THE USE OF INTRA-ARTERIAL INJECTIONS IN LOCAL SURGICAL INFECTIONS (*O primenenii vnutriarterial'nykh vlivanii pri mestnykh khirurgicheskikh infektsiyakh*).

T. F. Lavrova. Khirugiya No. 1, 18-22, 1947.

Experiments on 27 patients have shown that sulfonamide and metaphen are indicated in inflammatory conditions. An 0.5 per cent novocaine solution alleviates trophic disturbances resulting from injuries. The injections are useful as a supplement to surgical treatment, especially in indolent wounds. They are perfectly harmless, so long as the drug does not affect the blood-vessel wall. This therapy can be applied only in injuries of the head and limbs.

References to Current Articles

Wound Infections with Friedlander Bacillus Followed by Meningitis. Saul Solomon, New York University Medical School, New York, N. Y. New England J. Med. 237:149-52, July 31, 1947.

The Development of the Concept of Antisepsis and Asepsis from Lister to World War II. H. Winnett Orr, Lincoln, Neb. Surg., Gynec. & Obst. 85:209-24, September 1947. An historical review. 156 references. 8 figures (reproductions of title pages and letters).

Treatment of Panaritium (*K voprosu o lechenii panaritsiya*). A. F. Berdyaev, Central Polyclinic, The Ministry of Transportation, U.S.S.R. Khirurgiya No. 3, 81, 1947.

Treatment of Tetanus (*K voprosu o lechenii stolbnyaka*). A. D. Tokhiyan, The Classification Hospital, U.S.S.R. Khirurgiya No. 3, 79-80, 1947.

The Pathogenesis of Tetanus. A Review. (*Patogenez stolbnyaka. Obzor voprosa*). T. A. Grasmilk, U.S.S.R. Khirurgiya No. 3, 72-76, 1947.

Use of Gramicidine *S* in Treatment of Purulent Wounds (*Primenenie gramitsidina S pri lechenii gonoĭnykh ran*). Z. N. Katsnel'son, The Lenin Medical Institute of Moscow, U.S.S.R. Khirurgiya No. 3, 29-32, 1947.

Infection of Wounds with Gram-negative Organisms. Clinical Manifestations and Treatment. M. E. Florey, R. W. N. L. Ross and E. C. Turton, Radcliffe Penicillin Unit of the Medical Research Council. Lancet 1: 855-61, June 21, 1947.

Penicillin in Postoperative Progressive Bacterial Synergistic Gangrene. Report of a Case. S. Henry C. Clarke, St. Bartholomew's Hospital, London, England. Lancet 1:748-50, May 31, 1947.

Chronic Erysipeloid (Swine Erysipelas) in a Man. The Effect of Treatment with Penicillin. George W. Stiles, Bureau of Animal Industry, U. S. Department of Agriculture. J. A. M. A. 134:953-55, July 12, 1947.

Streptomycin Toxicity. Robert F. Farrington, Harriet Hull-Smith, Paul A. Bunn and Walsh McDermott, New York, N. Y. J. A. M. A. 134:679-88, June 21, 1947.

Some Observations on the Use of Curare in the Treatment of Tetanus. John Adriani and Alton Ochsner, Charity Hospital and School of Medicine, Tulane University, New Orleans, La. Surgery 22:509-15, September 1947.

2,2′ Dihydroxy-3,5,6,3′,5′6′ Hexachlorodiphenylmethane (G-11) as an Antiseptic for Use in Surgical Scrubbing. Donald G. C. Clark, New Haven, Conn., John S. Lockwood, New York, N. Y. and Elizabeth Lewit, New Haven, Conn. Surgery 22:360-66, August 1947.

Local Penicillin Therapy in Surgical Infections. H. J. McCorkle and Helen Warmer, University of California Medical School, San Francisco, Calif. Ann. Surg. 126:315-19, September 1947.

Anaerobic Wound Infections. V. M. Aristovski, Am. Rev. Soviet Med. 4: 388-90, June 1947.

Treatment of Localized Infections with Penicillin Infiltration. Frank K. Inui, Columbus, Ohio. Arch. Surg. 55:58-63, July 1947.

A Combination of Sulfanilamide and 9-Aminoacridine as a Surgical Antiseptic. S. Dale Spotts, Philadelphia, Pa. Am. J. Surg. 74:183-86, August 1947.

Thrombophlebitis of the Cavernous Sinus. Report of Complete Recovery in Case with Multiple Pulmonary Abscesses Complicating Pregnancy. Edward A. Brethauer, Jr., Pittsburgh, Pa. J. A. M. A. 134:1090-93, July 26, 1947.

Oculoglandular Tularemia Treated With Streptomycin. Percy Minden, Beverly Hills, Calif. and J. E. Springer, Akron, Ohio. J. A. M. A. 134:1061-64, July 26, 1947.

Treatment of Infections of the Neck. Carl H. McCaskey, Indianapolis, Ind. J. A. M. A. 134:1158-61, Aug. 2, 1947.

Thrombosis of the Cavernous Sinus. Newer Concepts in Its Management and Report of Three Cases. Samuel L. Fox and G. Brooks West Jr., Baltimore, Md. J. A. M. A. 134:1452-56, Aug. 23, 1947.

Streptomycin. Edwin J. Pulaski (Major, M.C., A.U.S.), Brooke General Hospital, Fort Sam Houston, Tex. Am. J. Surg. 73:651-57, June 1947.

5. Tumors

THE EXAMINATION OF SEROUS FLUIDS BY THE CELL-BLOCK TECHNIC.

C. B. Chapman and E. J. Whalen, Mallory Institute of Pathology, Boston City Hospital, Boston, Mass. New England J. Med. 237:215-20, Aug. 14, 1947.

Important diagnostic information concerning the presence of malignant tumors may be obtained by examining the serous fluids. The Mandelbaum method of preparation is still the best with minor modifications and is described. Results of its use for fifteen years are summarized. A series of 833 specimens of serous fluid were examined out of 1,078 submitted. Tentative or unqualified diagnoses of malignancy were made in 15 per cent. This is considered to demonstrate the value of this technic.

The care with which cell blocks are prepared and the criteria involved in evaluating the cells are important in determining the proportion of positive results. It is believed that definite cellular arrangement is essential but not the presence of complete acini as these limit the method's value. Cells that do not show true acinar arrangement are released by some malignant tumors, their malignancy being identified by the sheets of highly atypical cells. Evidence of anaplastic cell growth is desirable even when there are well formed acini. Clumped mesothelial cells may show mitotic figures and binucleate forms so that they resemble neoplastic cells but they do not have significant irregularity in arrangement and staining characteristics. A false positive diagnosis may be avoided in such cases by requiring definite evidence of anaplasia. Sufficient sediment for examination may be obtained by using Schlesinger's method or the Alzheimer technic.

Positive cell blocks from abdominal fluid were most often seen in carcinoma of the ovary. Heart disease, cirrhosis of the liver and tuberculosis were the most common nonmalignant cause of serous effusions in this series. False positive diagnoses were made in 3 cases which showed no evidence of malignancy at autopsy. This study indicates that a suggestive or unqualified diagnosis of malignancy based on examinations of cell blocks were 94 per cent correct. Negative results however were reported in 59 per cent of patients found at autopsy to have a malignant neoplasm. This procedure is considered of definite diagnostic value in cancer of the ovary, breast, lung, gastro-intestinal tract, pancreas and kidney. 6 references. 2 tables. 6 figures.

(*It would seem logical to state that other positive clinical findings should be present to determine whether or not some treatment is still possible.* —D.V.T.)

CYTOLOGIC RECOGNITION OF CANCER IN EXFOLIATED MATERIAL FROM VARIOUS SOURCES.

Warren C. Hunter and Howard L. Richardson, University of Oregon Medical School, Portland, Ore. Surg., Gynec. & Obst. 85:275-80, September 1947.

Modifications of the original Papanicolaou technic for the cytologic recognition of cancer in exfoliated cells from various sources are described. An ample amount of 10 per cent formalin solution is immediately added to the specimen of bronchial aspirations, gastric fluid, rectal mucus, etc. This stops cellular autolysis and begins the fixation process. A saturated aqueous solution of picric acid is added as soon as the material reaches the laboratory, filtered through filter paper and the precipitate pressed into the tip of the cone to make a compact mass which is then embedded in paraffin and sections cut as with tissues. This eliminates the need for long search because cells are well preserved and concentrated. It is essential that picric acid be superimposed when material is originally fixed in formalin as otherwise there is not a good contrast between the cytoplasm and nucleus. Isopropyl alcohol is used in the alcohol-ether fixation instead of ethyl alcohol as cell cytoplasm is then stained acidophilic instead of basophilic. A number of sections can be cut and mounted on the same slide and examined in pattern and proper relation to others, thus economizing on slides and enabling adequate examination of sections at different levels. Less than five minutes is needed for a survey under low power and rarely more than ten under high power.

Vaginal fluid is collected by the original Papanicolaou technic and immediately fixed in alcohol-ether. The remainder of the specimen is placed in a large test tube containing 70 per cent alcohol or is placed in the alcohol-ether bottle with the slide. Care must be taken to handle the mass gently and slide it into the solution so that it is not broken up. The squamous epithelium stains red to pink when fixed as tissue instead of blue to brown as when fixed in alcohol-ether but this is unimportant as cancer cells are recognized by size and nuclear appearance and not by color.

This method has been shown to be of marked diagnostic value in determining the presence of bronchoscopic, gastric, rectal and vesical cancer. Bronchoscopic specimens are obtained by saving the contents of the trap and either poured into alcohol-ether or taken directly to the laboratory. Urinary specimens must be fresh. All specimens are promptly fixed in formalin or picric acid solution, embedded, sectioned and stained by the Papanicolaou stain. It has been shown to be comparatively easy to differentiate normal from cancer cells. Bronchogenic cancer has been demonstrated by this method when biopsied specimens appeared normal.

This method has been showed to be much better than the hematoxylin-eosin technic for cells in fluids. Transudates and exudates are precipitated with picric acid, filtered, embedded and sectioned. This method also enables the organism of actinomycosis to be readily distinguished. The Papanicolaou stain has been much better than other tissue stains because of the distinctive

manner in which nuclei stand out under low power and the fine nuclear detail under high power. 6 references. 12 figures.

(*The same comment as was made concerning the article of Chapman and Whalen applies here.*—D.V.T.)

CUTANEOUS CANCER IN FINLAND. A CLINICAL AND RADIOTHERAPEUTIC STUDY OF 1,068 CASES.

S. Mustakallio, The Central Institute of Radiotherapy, Helsinki, Finland. Ann. chir. et gynaec. Fenniae 35: Suppl. 3, 95 pp., 1946.

In Finland skin cancer predominates in women over the other types. Incidence in men is somewhat lower than in women (46.3 per cent and 53.7 per cent). Basal cell cancer occurred in 20.0 per cent, spinocellular in 20.7 per cent of cases. The location was mostly on the face (96.7 per cent and 81.9 per cent). Baso-spinocellular cancer was seen in 8 per cent of cases. Multiple cancers predominated in the spinocellular cases (113 out of 151). In baso-spinocellular cancers they amounted to 15 per cent of cases. All three types of cases were seen simultaneously in 3 patients. Precancerous skin condition was noted in 8 per cent of basal cell and in 24 per cent of spinocellular cancers. Thus, skin cancer develops where a predisposition exists (seamen's or farmers' skin changes not included). At the institute skin cancer has been treated by radium implantations (732 patients; doses of 10 mg. on a needle 10 mm. long; filter equivalent to 1 mg. load; duration averaged four hours). Net cures amounted to 93.8 per cent (absolute figures not given). Roentgen treatment, by different methods, was used in large cancers, etc. Short distance, low voltage therapy was given in doses of 500 to 600 r daily, or 4,500 to 6,000 r total. In basal cell tumors 67.7 per cent were cured (95.7 per cent of net cures). In spinocellular cancers 53.4 per cent were cured (76.5 per cent of net cures) and in baso-spinocellular patients there were 80 per cent cures (93.2 per cent net), averaging 65.4 per cent cures and 91.2 per cent net cures in three years. Net cures by short distance roentgen ray were 97.6 per cent; this method proved valuable in eyelid cancers, owing to full shielding. Five years after the completion of treatment 10 per cent of cases had relapses but were cured again, with the exception of but 6 patients. Delay in treatment up to 4.4 years was common here. Therapy given to patients already treated elsewhere was usually less successful (by 19 per cent) than treatment of new patients. 36 references.

(*It would be interesting to determine if hats or other garments protected the skin of the men from sunshine.*—D.V.T.)

DOES BIOPSY IN CASES OF MALIGNANT TUMOR HARM THE PATIENT?

S. Mustakallio, Central Institute of Radiotherapy, Helsinki, Finland. Ann. chir. et gynaec. Fenniae 35:82-85, 1946.

On the basis of statistical data covering 8,000 biopsies performed at the author's hospital, as well as of 688 histologic examinations by the author (malignant tumors of the mouth, nose, pharynx, neck, cheek, gums, tongue, nasopharynx) it was concluded that biopsy, especially when performed just before, or during, radiologic treatment, does not stimulate growth, or increase the number, of metastases. The majority of patients had metastases before biopsy (47 to 57.7 per cent). Only a small number (10.7 to 16 per cent) developed them after the biopsy, the average time interval amounting to 10 to 21.6 months. In 209 out of the 688 patients no metastases were observed after the biopsy, for one year of longer.

References to Current Articles

The Surgery of Cancer. Charles Huggins, University of Chicago School of Medicine, Chicago, Ill. New England J. Med. 236:885-91, June 12, 1947.

Prophylaxis of Cancer. Frank E. Adair, Cornell University Medical College, New York, N. Y. Bull. New York Acad. Med. 23:383-93, July 1947.

The Early Diagnosis of Cancer. Elise S. L'Esperance, Kate Depew Strang Cancer Prevention Clinics, Memorial Hospital and The New York Infirmary, New York, N. Y. Bull. New York Acad. Med. 23:394-409, July 1947.

Metastatic Melanocarcinoma Involving the Small Intestine and Brain. Jack Spier and Edwin C. Wood, George Washington University School of Medicine, Washington, D. C. New England J. Med. 236:824-28, May 29, 1947.

Aspiration Biopsy of Lymph Nodes. R. E. Meatheringham and Lauren V. Ackerman, The Ellis Fischel State Cancer Hospital, Columbia, Mo. Surg., Gynec. & Obst. 84:1071-76, June 1947.

The Study of Malignant Cells with Phase Difference Microscopy. W. M. Firor and G. O. Gey, Baltimore, Md. Ann. Surg. 125:604-607, May 1947.

Etiology and Pathogenesis of Malignant Tumors. Report at the All-Union Oncological Convention, Leningrad, 16/1/1947 (*Etiologiya i patogenez zlokachestvennykh opukholeĭ. Rech' na vsesoyuznoĭ onkologicheskoĭ konferentsii v Leningrade*, 16/1/1947). N. N. Petrov, U.S.S.R. Khirurgiya No. 3, 6-12, 1947.

Organizing Anti-Cancer Campaign (*Zadachi organizatsii protivorakovoĭ bor'by*). A. I. Savitskii, The Central Oncological Institute, Ministry of Health, U.S.S.R. Khirurgiya No. 4, 10-17, 1947.

Clinical and Laboratory Notes. Removal of Senile Warts. Daniel McLellan, Vancouver, B. C., Canada. Canad. M. A. J. 57:292, September 1947.

Junction Nevus - Nevocarcinoma (The So-Called Melanoma Group). Wilbert Sachs, George Miller MacKee, Oscar D. Schwartz and Herbert S. Pierson, New York Post-Graduate Medical School and Hospital, Columbia University College of Physicians and Surgeons, New York, N. Y. J. A. M. A. 135:216-18, Sept. 27, 1947.

Acute Lymphatic Leukemia with Diabetes Insipidus and Uremia. Joseph E. Flynn, (Major, M.C., A.U.S.) Army and Navy General Hospital, Hot Springs National Park, Ark., and James M. Bowers, (Major, M.C., A.U.S.) J. Urol. 58:106-11, August 1947.

Nitrogen Mustards in Hodgkin's Disease. Report on 21 Cases and 4 of Other Reticuloses. M I. R. Apthomas and H. Cullumbine, Christie Hospital and Victoria University, Manchester, England. Lancet 1:899-901, June 28, 1947.

Epithelioma Complicating Lupus Erythematosus. Charles Ryan. Brit. M. J. 4521:334-35, Aug. 30, 1947.

Clinical Problem of Pheochromocytoma. Elmer C. Bartels and Norman M. Wall, Lahey Clinic, Boston, Mass. S. Clin. North America 27:605-15, June 1947.

Paths of Cancer Biotherapy. N. G. Klyueva. Am. Rev. Soviet Med. 4:408-14, June 1947.

Malignant Tumors of the Skin in Military Personnel. W. Macomber, Albany, and F. X. Paletta, New York, N. Y. Plast. & Reconstruct. Surg. 2:234-48, May 1947.

6. Neurosurgery

THE MECHANISM AND MANAGEMENT OF INJURIES OF THE HEAD.

E. S. Gurdjian and J. E. Webster, Wayne University College of Medicine and Receiving Hospital, and Grace Hospital, Detroit, Mich. J. A. M. A. 134:1072-77, July 26, 1947.

The more important advances made in the study of the mechanism and management of head injuries during the last ten years are analyzed. These injuries may result from direct or indirect violence. The head is relatively fixed and the striking body in motion in the first, the cranial contents being compressed by a deformed skull or the head put in motion. The head is in motion in the indirect injuries, comes in contact with a slower moving or stationary object and deceleration and compression may occur. Compression, acceleration and deceleration may coexist in common injuries such as automobile accidents or falls. The foramen magnum may be an important factor in medullary involvement because the head accelerates and deformity of the skull produces waves of increased intracranial pressure. The foramen may cause pressure gradients between the spinal canal and cranial cavity with involvement of the medulla. Experimental cranio-cerebral trauma in animals causes abnormalities of the medullary centers with death sometimes

following their direct damage. Similar effects have been found in autopsies of human beings killed in accidents.

Skull deformities and intracranial pressure changes at impact are now studied by new technics which are described. Deformities of the skull are studied by the strain gage-cathode ray oscilloscope method and the "stress-coat" technic. The former determines deformations by a sensitive, quantitative method and the latter enables the direction and path of strains after a blow to be studied. The severity of the physiologic effects following a blow on the head depends upon the amount of energy absorbed by the head whether it is fixed or moving. It has been shown that intracellular changes occur with even minute degrees of concussion.

Increased intracranial pressure occurs at the site of a blow on the head, is ordinarily wave-like or directional and does not necessarily involve the whole cranial cavity. A negative pressure develops exactly opposite the point of impact. Tissues in the path of the pressure wave may be sheared and torn as a result of steep pressure gradients of one fifteen hundredth of a second or less.

A "temporary" cavity about a bullet passing through the brain causes the brain tissue to be extensively pulped at some distance from the bullet track. Successful treatment depends upon complete debridement of the pulped brain with thorough removal of foreign materials and bone fragments The entrance wound is completely excised by long curved incisions. Shattered bone is removed by a rongeur and the dura closed if at all possible by using temporal fascia, pericranium or fascia lata. Exposed brain is covered with transposed scalp. Chemotherapy and penicillin with these other measures have greatly simplified the management of brain infections, especially with abscess formation but gunshot wounds of the brain should be thoroughly debrided as soon as possible if condition of the patient permits. Primary debridement can still be safely performed if operation must be delayed several days. Simple and compound depressions may be repaired so as to prevent skull defects. If the dura is not torn, bone fragments may be used except in cranio-orbital and frontal sinus wounds where later repair is preferable. Small defects may be closed by osteoperiosteal transplants and large ones with tantalum and methyl methacrylate. Preparation of the transplant is important. 18 references. 6 figures.

CYSTIC TERATOMAS AND TERATOID TUMORS OF THE CENTRAL NERVOUS SYSTEM IN INFANCY AND CHILDHOOD.

Franc D. Ingraham and Orville T. Bailey, The Children's Hospital and Harvard Medical School, Boston, Mass. J. Neurosurg. 3:511-32, November 1946.

A series of 8 intracranial and 7 intraspinal cystic teratomas and teratoid tumors are described. Three intracranial tumors were cerebellar, 1 was in the third and 1 in the fourth ventricle, 1 was in the choroid plexus, 1 was frontoparietal and 1 was frontal bilateral. The intraspinal tumors

were 2 cervical, 1 cervicodorsal, 1 dorsal and 3 lumbar. These tumors occurred among 231 neoplasms in children over a period of twenty years.

This series was arbitrarily limited because these tumors closely resemble others of the central nervous system histologically. Craniopharyngiomas, chordomas and sacrococcygeal teratomas were excluded. These intracranial and intraspinal tumors had identical pathology and are discussed together. Details are well illustrated. The incidence of mesodermal, entodermal and ectodermal derivatives is tabulated. All these tumors contained one or more cysts while their solid portions varied from keratinizing epithelium to a profuse mixture of all three germ layers. The tissue of the solid portions of the tumors had a characteristic gross appearance, the texture being firm and grayish-white with occasional yellow areas from old hemorrhages. This indicated the presence of enough collagenous connective tissue to determine the texture of the solid parts and enabled these tumors to be differentiated from the glioma group at operation. The cysts varied greatly in size and contained fluid which varied considerably between both individual cysts and tumors. The character of the fluid was largely determined by the type of cells lining the cyst and the presence or absence of hemorrhage. This study did little to clarify the histogenesis of the condition.

The clinical aspects of the intracranial and intraspinal tumors differed and are discussed separately. In general, the former had the same symptoms and diagnostic problems of any tumor in the same location, the pathologic diagnosis not being indicated preoperatively unless there was also some associated congenital anomaly. Symptoms developed slowly because these tumors are slow growing and because children stand increased intracranial pressure better than adults. Skull roentgenograms may show suggestive calcified areas but this did not occur in this series. The size and location of the tumors were indicated by filling defects on ventriculograms or encephalograms. Surgically these intracranial tumors varied considerably, some being well encapsulated and easily dissected out while others were so intimately adherent to adjacent tissues that little could be done. One of the 8 patients with intracranial tumor is living more than five years and 2 less than five years postoperatively while 5 are dead. Abstracts of the case histories of 5 of these patients are presented in detail.

Symptoms of the intraspinal tumors were the same as any growth at the affected level and not distinctive. They were easily shown by roentgenogram and frequently by physical examination because the vertebrae were involved. The bony defects were not necessarily at the same level as the tumor but were important in suggesting the presence of a teratoid tumor or teratoma. Some of these intraspinal tumors also were encapsulated so they could be readily removed while others formed a cystic mass which could only be evacuated and partly removed. Effort was made not to cause additional damage to the cord in the latter variety. Only a ribbon-like strip of cord was left in 2 cases with some tumor tissue but one of these completely and the other almost completely recovered spinal cord function. These recoveries were maintained for ten and four years respectively. Two of these 7 patients are living

more than five years postoperatively, 4 less than five years and 1 is dead. The case histories of 2 of these cases are presented in detail and discussed.

It is difficult to give a prognosis in these cases as some tumors are easily removed, some can only be partially removed but remain quiescent, some are cured after several operations and others are so extensive or malignant that radical surgery is impossible. 8 references. 2 tables. 14 figures.

References to Current Articles

Permeability of the Hemato-Encephalic Barrier to Penicillin in Normal and Pathologic Conditions (*Pronitsaemost' gemato-entsefalicheskogo bar'era dlya penitsillina pri normal'nykh i patologicheskikh usloviyakh*). V. V. Kovanov. Khirurgiya No. 1, 12-18, 1947. Experiments on dogs have shown that permeability of the above barrier is limited when up to 30,000 units of penicillin are injected into the carotid artery under normal conditions. Doses of 60,000 to 100,000 units decrease the barrier resistance. Up to 1.6 units of penicillin may appear in the cerebrospinal fluid. Trepanation of the skull has no appreciable effect on the barrier. In venous blood the penicillin level is lower than in normal subjects. Inflammation caused by trepanation lowers the barrier resistance and the penicillin content in the fluid rises up to 6.4 units.

The Treatment of Severe Intracranial Infection by Repeated Intraventricular Injection of Penicillin. Theoretical and Practical Considerations. B. D. Wyke, University of Sydney, Sydney, Australia. Surg., Gynec. & Obst. 85:340-59, September 1947. Presents an historical review of the development of this procedure and discusses the indications for its use; the technic of the procedure; and postoperative management. 19 references. 5 figures.

The Changing Outlook in Surgery as a Result of Chemotherapy. III. Cranial Surgery. R. S. Hooper, Royal Melbourne Hospital, Victoria, Australia. Australian & New Zealand J. Surg. 16:277-82, April 1947.

Penicillin in the Prevention of Infection During Operations on the Brain and Spinal Cord. J. B. Pennybacker, Margaret Taylor and Hugh Cairns, Radcliffe Infirmary, Oxford, England. Lancet 253:159-162, Aug. 2, 1947. 7 references. 4 tables.

The Reflex Vascular Reaction and Changes of the Arterial Pressure Observed during Surgical Intervention in Craniocerebral Wounds (*O reflektorno-sosudistykh reaktsiyakh i izmeneniyakh arterial'nogo davleniya pri eperativnykh vmeshatel'stvakh po povodu cherepno-mozgovykh raneniĭ*). V. M. Ugryumov. Khirurgiya No. 5, 40-44 1947.

The Clinic and Treatment of Purulent Traumatic Meningitis. (*Klinika i Lechenie gnoĭnykh travmaticheskikh meningitov*). V. A. Paramonov, The First Lenin Medical Institute of Moscow, U.S.S.R. Khirurgiya No. 5, 44-47, 1947. 1 table.

Disturbances of Metabolism Associated with Head Injuries. Wilfred Pickles, Rhode Island Hospital, Providence, R. I. New England J. Med. 236: 858-62, June 5, 1947.

The Pathological Anatomy and Lethal Factors in Acute Fatal Cranio-Cerebral Injury. D. Magner, Regina, Sask., Canada. Canad. M. A. J. 57: 215-21, September 1947.

Sterile Operating Lamp. Frederic Schreiber and C. J. Shuttleworth, Detroit, Mich. J. Neurosurg. 4:290-91, May 1947.

A New Combined Perforator and Drill. John T. B. Carmody, Worcester, Mass. J. Neurosurg. 4:292, May 1947.

Peripheral Extension of Radiopaque Media from the Subarachnoid Space. J. Douglas French and William H. Strain, Rochester, N. Y. Surgery 22:380-89, August 1947.

The Diagnostic Significance of Ocular Pain in Cranicocerebral Trauma. T. M. Mokhova, Neurosurgery Institute of Moscow, U.S.S.R. Am. Rev. Soviet Med. 4:400-402, June 1947.

Craniocerebral Trauma. F. J. Wooliever, Central Oregon Medical Society, Eugene, Ore. Northwest Med. 46:614-21, August 1947.

Polyethlene, a New Synthetic Plastic for Use in Surgery. Experimental Applications in Neurosurgery. Franc D. Ingraham, Eben Alexander, Jr. and Donald D. Matson, Boston, Mass. J. A. M. A. 135:82-87, Sept. 13, 1947.

Fibrin Film in Neurosurgery, Further Studies. The Insertion of Fibrin Film Between the Sutured Dura and the Intact Leptomeninges. The Effect of Roentgen Therapy on Tissue Reactions to Fibrin Film. Orville T. Bailey, Franc D. Ingraham, Edward B. D. Neuhauser and Cully A. Cobb, Harvard Medical School, Boston, Mass. J. Neurosurg. 4:465-71, September 1947.

Empyema of Frontal Sinus Simulating Osteomyelitis. Patrick J. McNicholas, Irish Red Cross Hospital, St. Lô, France. Brit. M. J. 4510:850, June 14, 1947.

7. Skull

CONGENITAL SINCIPITAL ENCEPHALOCELE AND ITS TREATMENT, WITH SPECIAL REFERENCE TO THE STRUCTURE OF THE WALL.

M. J. Mustakallio, Helsinki, Finland. Ann. chir. et Gynaec. Fenniae 35:Suppl. 2, 56, 1946.

Four cases of congenital encephalocele were observed by the author (a 3 week old girl, a boy of 17, a 7 month old girl and a woman of 20). All except the 7 month old infant were operated upon and the sections examined in comparison with control sections of normal skin from the glabella. In contrast to literature evidence, in all 4 cases no other anomaly of mind or body was present, nor was this deformity found in the patients' families. (The 20 year old woman lacked frontal sinuses, as the only anomaly).

In spite of the usual bad prognosis for untreated cases (9 per cent of these have reached maturity), 2 of the author's patients were 17 and 20. Also, despite high mortality recorded in these operations (up to 60 per cent),

the patients have recovered without any complications, except the 7 month old girl (mild meningitis, cured by 500,000 units of penicillin).

The etiology is not clear, but some endogenic factor undoubtedly exists. In the above cases only the 7 month old girl and the 20 year old woman had some slight deviations in the family: a twin sister (normal) and a left-handed sister, also normal. Yet family recurrences are on record in literature, indicating hereditary origin.

Morphologically the encephaloceles were large, 2 to 3 cm. in diameter. In all patients operated on they increased in size with time. The wall of the tumor was thinner than the glabellar skin (3.5 to 4.5 mm., as against 6.5 mm.) The subdermal layer was missing in the 3 week old girl. Lanugo and sebaceous glands were missing both infants. The muscle layer was filled with fat in the 20 year old woman but not in the others. The vascular tissue (consisting of large blood vessels) was present in the corium of all 3 patients operated on. The veins were thick-walled, their intimas filled with elastic fibers. The endothelium alone formed the walls of these vessels, as in cavernous tissue. The spatious layer (stratum laxum) averaged 2.5 mm. In the 7 month old girl this layer was thinner (1.75 mm.) but at the bottom a nervous tissue layer 0.6 mm. thick (stratum gliosum) was present, missing in the other 2 subjects operated on. Collagenous tissue was the base of this layer, with glia cells and fibers, as well as blood vessels, filling the meshes of the collagenous network. This layer corresponded to the pia-arachnoid combination. Nervous tissue was present in all three specimens. It had a slight different location in different patients, but in all of them it was part of the encephalocele wall. The fibers were sheathed in connective tissue. The arachnoid as well as the pia mater were lacking as separate structures in the walls of these specimens. Ganglion cells were also lacking. The glia cells in the stratum laxum were mostly of the macrotype, while the oligodendroglial cells rare. The glia fibers formed concentric bundles, which is the structure of the pia-arachnoid membranes. This confirms the fact that both were present as a unity, in a thickened form. The dura mater was absent. 20 references. 23 figures.

SURGICAL MEANS OF FIGHTING INTRACRANIAL INFECTIONS IN GUNSHOT WOUNDS OF THE SKULL (*Khirurgicheskaya bor'ba s vnutricherepnoĭ infectsieĭ pri ognestrel'nykh raneniyakh cherepa*).

V. A. Gusynin. Khirurgiya No. 1, 35-46, 1947.

The author's experience during World War II has been subjected to statistical study, and from the total of 1,018 case histories analyzed the following conclusions were drawn: (1) lowering of mortality in skull infections was due chiefly to primary (301 cases) and secondary (555 cases) treatment of the infected wound. The secondary treatment was done at the evacuation hospitals twice as frequently as at the front line hospitals; (2) operative treatment of brain abscesses was performed mainly at the evacuohospitals, the mortality being 38.2 per cent. Surgical prophylaxis of stem injuries

was found to be the chief condition for lowering the mortality from septic complications in the deep zones of the brain (ventricles, etc.). Cases sent back to the army after the operation on the brain amounted to 40 per cent.

References to Current Articles

The Surgical Treatment of Spontaneous Cerebrospinal Rhinorrhea. Claude C. Coleman and Charles E. Troland, Richmond, Va. Ann. Surg. 125: 718-27, June 1947.

The Mechanism of Production of Linear Skull Fracture. E. S. Gurdjian, H. R. Lissner and J. E. Webster, Grace Hospital Research Fund, and Wayne University, Detroit, Mich. Surg., Gynec. & Obst. 85:195-210, August 1947.

Intracranial Osteochondroma. Robert W. Forsythe, George S. Baker, Malcolm B. Dockerty and John D. Camp. Proc. Staff Meet., Mayo Clin. 22:350-56, Aug. 20, 1947.

Compounds Depressed Fractures of the Skull Involving the Superior Longitudinal Sinus. Abraham Kaplan, Mt. Sinai Hospital, New York, N. Y. Am. J. Surg. 74:80-85, July 1947.

The Replacement of Free Bone Plates in Routine Craniotomies. Bronson S. Ray and Herbert Parsons, New York Hospital and Cornell University Medical College, New York, N. Y. J. Neurosurg. 4:299-308, July 1947.

8. Brain

NEURINOMAS OF THE CEREBELLOPONTILE RECESS. A CLINICAL STUDY OF ONE HUNDRED AND SIXTY CASES INCLUDING OPERATIVE MORTALITY AND END RESULTS.

Antonio Gonzalez Revilla, Johns Hopkins Hospital, Baltimore, Md.
Bull. Johns Hopkins Hosp. 80:254-96, May 1947.

From 1926 to 1945, 160 cases of neurinomas of the cerebellopontile recess were operated at Johns Hopkins Hospital; of these 145 were unilateral acoustic neurinomas, 3 unilateral acoustic neurinomas with von Recklinghausen's neurofibromatosis, 6 bilateral acoustic neurinomas, 3 neurinomas of the fifth cranial nerve, 2 neurinomas of the cranial nerve, and 1 neurinoma of the eleventh cranial nerve.

In the 145 cases of unilateral acoustic neurinoma, 91 patients were females and 54 were males; the age varied from 19 to 69 years, the average age on admission being 44.1 years; the average age at onset of symptoms, however, was 39.6 years. In 46.0 per cent of the cases the tumor was on the right side and in 53.1 per cent on the left side. In the history of these patients the symptoms showed no definite chronologic order in the time of their appearance; the chronology of symptoms described by Cushing was noted in only 45 cases (31 per cent). In 30 patients symptoms of involvement of the fifth cranial nerve developed shortly after the auditory symptoms and labyrinthine disturbances. Incoordination and other cerebellar symptoms devel-

oped after symptoms of eighth nerve involvement in 20.7 per cent. Headache of various types occurred in 68.2 per cent of these cases, was the initial symptom in 12.4 per cent, and occurred before the auditory symptoms in 20.4 per cent. Symptoms of involvement of the trigeminal nerve were present in 56.5 per cent; usually numbness of the face was the chief symptom, but typical tic douloureux occurred in 16 cases. Headache and trigeminal nerve symptoms developed simultaneously in only 8 cases. There was a history of tonic convulsions in only 6 cases.

On admission, 134 of the patients in this group showed no disturbance of consciousness and were alert and cooperative; in 90 cases there was no impairment of vision; there was partial diminution of vision in 44 cases, and total loss of vision in 11 cases. Papilledema was present in 98 cases, in 28 of which it was massive. In 125 cases there was some sensory impairment on the face or cornea due to involvement of the fifth cranial nerve; the corneal reflex was absent or diminished in 122 of these cases; and in 14 this was bilateral. There was facial paralysis (seventh cranial nerve) in 70 cases (48.8 per cent). Audiograms were made in all except 5 comatose patients, and in 4 of these audiograms had been made elsewhere before admission. There was impairment of hearing of the neurogenic type in 139 cases (95.8 per cent), which was unilateral in all but 5 cases; the hearing loss was complete in 107 cases. As the diagnosis was obvious in these cases vestibular tests were not made in all cases. The cold caloric test was made in 87 cases, in 77 of which it showed impairment of vestibular function on the same side as the tumor; in 5 cases the vestibular function was also impaired on the opposite side. In the 10 cases with no loss of vestibular function, the hearing was definitely impaired. Nystagmus, usually of the coarse horizontal type, was present in 105 cases; incoordination of the cerebellar type in 125 cases. In 114 cases in which stereoscopic films were made, enlargement or destruction of the internal auditory orifice was shown in 52 cases; and evidence of increased intracranial pressure in 7 cases.

Almost all these neurinomas were operated by Dandy; 1 was operated by some one else, and 4 tumors were recurrences originally operated elsewhere; these 5 cases are excluded from the consideration of operative results. In the twenty year period the operative mortality in the remaining 140 cases was 22.1 per cent with the different technics employed; but in the last eight years since the method of unilateral approach with uncapping of the cerebellum, careful dissection and removal of the capsule was employed, the operative mortality was reduced to 6.5 per cent; and in the last five years it was reduced to 2.4 per cent (1 death in 41 cases). Most of these patients died within twenty-four to forty-eight hours after operation, showing the usual symptoms of damage to the brain stem; 1 died on the operating table; a few deaths, due to pneumonia or secondary infection, occurred after the second postoperative day. It has been possible to follow up 76 patients; 6 of these patients have died; in 4 instances death was evidently due to direct sequelae of the operation. One developed a recurrence eleven years after operation, and a second operation was done. In operation on neurinomas

of the cerebellopontile recess, every effort should be made to preserve the continuity of the facial nerve, but if this was not possible a spinofacial anastomosis was done in practically all cases in this series showing postoperative facial paralysis; in 21 of these cases a plastic operation was also done for better cosmetic results.

In the 3 cases of unilateral neurinomas with von Recklinghausen's disease, the average age of the patients on admission was 24.3 years; and the average age at onset of intracranial symptoms 14.3 years. In all the chief symptoms were auditory (deafness, progressive or sudden) and cerebellar; in 1 case the first symptom was due to trigeminal nerve involvement. In all these cases the tumor was on the right side; at operation the unilateral approach with resection of the cerebellar cap was used. One patient died postoperatively with signs of injury to the brain stem; 1 died seven years after operation with symptoms of spinal cord involvement but no signs of local recurrence; 1 patient is living and well six years after operation.

In the 6 cases of bilateral acoustic neurinomas, the average age of the patients at the time of admission was 23 years, the average age at onset of symptoms was 17.8 years: In all cases there were cerebellar symptoms and bilateral impairment of hearing; facial weakness was present in 5 cases, bilateral in 2 of these; sensory changes in the face and diminution of the corneal reflex were present in 4 cases, bilateral in 2 of these. At operation the bilateral cerebellar approach was used in 3 cases and the unilateral approach in 3 cases. There were 3 postoperative deaths, all in the cases in which the bilateral approach was used. One patient had only one tumor removed at operation and died seven years later from pneumonia; autopsy showed an acoustic neurinoma on the opposite side. In 1 case the second tumor was removed four years after the first, and the patient is living and well. In 1 case in which the tumor on one side was successfully removed, the patient reported six months later when totally blind; removal of the second tumor was not advised.

In the 3 cases of neurinoma of the fifth nerve, the average age of the patients at admission was 57 years and the average age at onset was 47 years. In all the initial and the predominant symptoms were those of fifth nerve involvement, tic douloureux in 2 cases and numbness of the face in 1 case; at the time of admission these patients also showed auditory symptoms and 1 cerebellar ataxia. At operation careful dissection of the capsule was done in all cases; there were no postoperative deaths. One patient showed complete return of hearing and normal vestibular function two months after operation; the other 2 have not been followed up.

In the 2 cases of neurinoma of the tenth cranial nerve hoarseness was the chief symptom; in one, unilateral paralysis of the vocal cord and palate on the side of the tumor was the only neurologic sign; the other patient showed symptoms of involvement of several cranial nerves. In both the tumor was successfully removed, and the patients are living three and six years respectively without signs of recurrence.

In the case of neurinoma of the eleventh cranial nerve, there was peri-

pheral neurofibromatosis as well as signs of eleventh nerve involvement, but no impairment of hearing. At operation the tumor was successfully removed and the patient was much improved when seen a year after operation. 33 references. 2 tables. 6 figures.

INTRACRANIAL MENINGIOMAS, SURGICAL RESULTS.

Francis C. Grant, University and Postgraduate Hospitals, University of Pennsylvania School of Medicine, Philadelphia, Pa. Surg., Gynec. & Obst. 85:419-31, October 1947.

From Jan. 1, 1936 to Jan. 1, 1947, 149 cases in which the diagnosis of intracranial meningioma was verified were admitted to the Neurosurgical Clinics of the University and Postgraduate Hospitals of the University of Pennsylvania, Of the 149 patients, 92 were females and 57 males. The ages ranged from 2 to 76 years; the average age of the female patients at the time of operation was 43 plus years, and of the male patients 43 minus years. The average duration of symptoms before operation was approximately two and three-quarters years, but if 6 patients with a history of preliminary seizures eight years before operation are omitted, the average duration of symptoms was a fraction over two years.

In 33 of these 149 cases, localization of the tumor was impossible by neurologic examination, including study of the visual fields, and roentgen examinations. The flat roentgen films were negative in 48 cases; in 81 cases the Roentgenray films correctly indicated the site of the tumor, but in 10 cases were misleading in regard to localization. Ventriculography was done in 61 cases, establishing a correct diagnosis in all but 2 cases, in both of which insufficient air was employed; in one of these cases a second ventriculogram was successful. Encephalograms were made in only 20 cases, localizing the tumor correctly in 16 cases. Electroencephalography has not been frequently used in the clinics and was employed in only 13 of these cases of meningioma, with 11 correct and 2 incorrect diagnoses.

Ventricular tap was employed in these cases for both the preoperative and the postoperative control of intracranial pressure. In the past five years the serum protein level has been determined and if the level was found to be low preoperatively or postoperatively amigen or blood was employed. All patients operated on for brain tumor are given 2,500 to 3,000 cc. fluid intravenously in the first twenty-four hours after operation. Recently whole blood has been employed in much larger amounts than in the earlier cases in this series. In 27 of the last 93 operations, 1,000 cc. or more of whole blood were given. Operations for intracranial tumors are done with the patient in the prone position, using local anesthesia plus morphine, sometimes supplemented by small amounts of pentothal sodium, for supratentorial tumors and endotracheal ether for suboccipital tumors. Hemostasis during the approach to a meningioma is important; after exposure of the tumor, electrocoagulation is employed for control of bleeding. If a meningioma is close to the longitudinal sinus, complete removal of the tumor may

be impossible; coagulation of any tumor remnants lying against the falx and close to the sinus is indicated. In cases with a large dural defect after removal of the meningioma, a fascia lata or temporal fascia graft is used if the defect lies over the motor cortex, and may be used in other cases. In recent years fewer bone flaps have been completely sacrificed.

In the series of 149 meningiomas reported there were 25 postoperative deaths and 3 nonoperative deaths. From Jan. 1, 1936 to Dec. 31, 1940, 79 operations were done on 71 patients with 17 deaths, a case mortality of 24 per cent and an operative mortality of 10.6 per cent. From Jan. 1, 1941 to Dec. 31, 1946, 84 operations were done on 75 patients, with 8 deaths, a case mortality of 10.6 per cent, and an operative mortality of 9.5 per cent. Up to Apr. 1, 1947, 7 additional intracranial meningiomas have been removed making a total of 93 operations on 82 patients with 8 deaths, a case mortality of 9.7 per cent and an operative mortality of 8.6 per cent.

Of the 121 patients surviving, 113 have been followed up since discharge from the hospital. Of these, 11 are known to have died, 7 from a recurrence of the tumor and 4 from intercurrent disease. Of the 102 patients living, at the time of this report, 34 are well and working at their old jobs or some similar job. In 31 of these cases the tumor was completely removed and they may be considered to be cured; in the other 3 cases, the tumor was not completely removed and a recurrence can be expected. Of the other 68 living patients all are handicapped to a greater or less degree, either by loss of vision (present before operation), convulsive attacks, or complete or partial hemiparesis or spasticity. In some of the patients with convulsive attacks, the attacks are well controlled with phenobarbital and the patients can do some work.

Modern methods have reduced the operative mortality in cases of intracranial meningioma (in this series from 21 to 8.6 per cent), but this record might have been still better if the more conservative procedure of a two-stage operation had been used more frequently. 6 references. 1 table. 10 figures.

EXTRACTION OF FOREIGN BODIES FROM THE CEREBRUM UNDER CONTROL OF THE X-RAY SCREEN. (*K voprosu udaleniya inorodnykh tel golovnogo mozga pod kontrolem rentgenovskogo ekrana*).

V. I. Ishkhanov. Khirurgiya No. 1, 53-54, 1947.

This is a preliminary communication, yet the technic described, though based on limited material, has been fully worked out. This method reduces to a minimum the trauma of the brain substance and the danger of infection. The procedure is especially effective in removing bullets and shrapnel fragments which remain in the brain after the wound has been healed. It includes: (1) roentgenogram localizing the foreign body; (2) trochoscopic examination, to watch for possible shifting of the fragment; (3) trepanation under control of the X-ray screen.

BLOOD-LETTING IN TREATMENT OF HIDDEN CRANIAL TRAUMAS. LONG-RANGE EFFECT. (*Otdalennye rezul'taty lecheniya zakrytykh travm cherepa krovopuskaniem*).

D. M. Grosdov. Khirurgiya No. 1, 46-52, 1947.

The increased intracranial pressure observed in cranial traumas is closely linked with the impairment of circulation. In the majority of concealed traumas the venous blood pressure is raised. With this fact in mind, blood-letting was applied to 82 acute patients, with good results. It restored normal circulation of blood and cerebrospinal fluid, improved nutrition of nerve elements and inhibited atrophic processes in the cortex. Over 400 cc. of blood was drawn, in order to affect the pressure. The patients, followed up for two to four years, showed most frequently vasomotor instability. Residual symptoms were noted less often than in cases treated with lumbar punctures and dehydration during the acute stage of injury.

RESTORATIVE TREATMENT IN CRANIOCEREBRAL WOUNDS

(*Vosstanovitel'noe lechenie pri cherepno-mozgovykh raneniyakh*).

P. A. Kartashev. Khirurgiya No. 1, 44-46, 1947.

Open treatment of brain wounds was found to increase the number of lethal outcomes both in the first and at the start of the second world war. In 1941-1942 the author had used the Bakulev and Lebedenko method of closed suture of the skin in treating purulent conditions resulting from gunshot wounds. Experience with 1,018 such cases made evident the advantages of this method (lowering the number of fatalities and reducing the complications). However, this is not the perfect solution of the problem. An absolutely closed suture of both dura and skin was tried on 553 cases. The good results obtained warrant carrying on of these experiments.

PARTIAL EXCISION OF THE MOTOR CORTEX IN TREATMENT OF JACKSONIAN CONVULSIONS. RESULTS IN FORTY-ONE CASES.

Cobb Pilcher, W. F. Meacham, and T. J. Holbrook, Nashville, Tenn. Arch. Surg. 54:633-43, June 1947.

In 41 patients with severe and frequent jacksonian convulsions but without space-consuming or gross cicatricial lesions, partial excision of the motor cortex has been carried out. No microscopic lesion was found in the tissue removed in 14 cases. Gliosis was present in the remainder.

There were 2 operative deaths. Gradual return of motor function with little or no disability occurred in all but 4 patients, who had moderate (3 patients) or severe (1 patient) hemiparesis.

Eight patients have been completely relieved of convulsions, 12 have shown pronounced improvement, 9 have been improved to a lesser degree, 8 have shown no improvement and 3 have subsequently died (1 of other cause).

It is believed that partial excision of the motor cortex has a place of real value in selected cases with focal motor convulsions. 23 references. 5 tables. 2 figures.

Author's abstract.

References to Current Articles

The Convulsive Effects of Streptomycin Topically Applied to the Cerebral Cortex. Henry M. Suckle, Roland R. Liebenow and O. Sidney Orth, General Hospital and University of Wisconsin Medical School, Madison, Wis. J. Neurosurg. 4:370-79, July 1947.

Movable Foreign Body Within the Cerebral Ventricle. A Case Report. Leonard T. Furlow (Capt., M.C., U.S.N.R.), Morris B. Bender (Comdr. M.C., U.S.N.R.) and H. Lukas Teuber, (Ph.M. 3/c U.S.N.R.) J. Neurosurg. 4:380-86, July 1947.

Papilloma of the Choroid Plexus with Report of an Unusual Case. James C. Walker and Gilbert Horrax, The Lahey Clinic and the New England Deaconess Hospital, Boston, Mass. J. Neurosurg. 4:387-390, July 1947.

Osteoplastic Flap Method in the Treatment of Subdural Abscess. Robert L. Glass, Indiana University School of Medicine, Indianapolis, Ind. J. Neurosurg. 4:391-93, July 1947.

Effect of Frontal Lobectomy on Blood Sugars of Normal Cats and Monkeys and Adrenal Denervated Cats. Margaret A. Kennard, C. W. Hampel and M. Dorrit Willner, New York University College of Medicine, New York, N. Y. Am. J. Physiol. 149:246-53, April 1947.

Two Tumors, Meningioma and Glioblastoma Multiforme, in One Patient. Emanuel H. Feiring and Leo M. Davidoff, Montefiore Hospital, New York, N. Y. J. Neurosurg. 4:282-89, May 1947.

Pituitary Tumor. Lewis M. Hurxthal, Lahey Clinic, Boston, Mass. S. Clin. North America 27:530-34, June 1947.

Abolition of Painful Phantom Foot By Resection of the Sensory Cortex. Dean H. Echols and J. A. Colclough, New Orleans, La. J. A. M. A. 134: 1476-77, Aug. 23, 1947.

Cerebral Angiography. A Technique Using Dilute Diodrast. Franc D. Ingraham and Cully A. Cobb, Jr., Harvard Medical School, Boston, Mass. J. Neurosurg. 4:422-34, September 1947.

An Additional Approach to the Internal Carotid Artery for Cerebral Angiography. Arthur Ecker and Richard H. Chamberlain, Syracuse University College of Medicine, Syracuse, N. Y. J. Neurosurg. 4:444-50, September 1947.

The Three Types of Glioblastoma. Eduard Busch and Erna Christensen, Institute of Pathology, Rigshospitalet, Copenhagen, Denmark. J. Neurosurg. 4:200-20, May 1947.

Tic Douloureux and Its Relationship to Tumors of the Posterior Fossa. Analysis of Twenty-Four Cases. Antonio Gonzalez Revilla, The Johns Hopkins Hospital Baltimore, Md. J. Neurosurg. 4:233-39, May 1947.

Modern Considerations of the Man With Brain Injury. John A. Aita (Capt. M.C., A.U.S.) Omaha, Neb. J. Neurosurg, 4:240-54, May 1947.

Cerebral Swelling, Histopathology, Classifications and Clinical Significance of Brain Edema. I. Mark Scheinker, Cincinnati General Hospital and the University of Cincinnati, College of Medicine, Cincinnati, Ohio. J. Neurosurg. 4:255-75, May 1947.

A Dermoid Tumor of the Lateral Ventricle Associated with Internal Hydrocephalus. Howard A. Brown, University of California Medical School, San Francisco, Calif. J. Neurosurg. 4:472-75, September 1947.

Ectopic Pinealomas in the Chiasmal Region. Report of Three Cases. Gilbert Horrax and J. P. Wyatt, The Lahey Clinic and the New England Deaconess Hospital, Boston, Mass. J. Neurosurg. 4:309-26, July 1947.

Hemifacial Spasm. A Note on the Etiology in Two Cases. Eldridge Campbell, and Christian Keedy, Albany Medical College, Albany, N.Y. J. Neurosurg. 4:342-47, July 1947.

Some Additional Electroencephalographic Techniques for the Localization of Intracranial Lesions. B. K. Bagchi and R. C. Basset, University of Michigan Medical School and Hospital, Ann Arbor, Mich. J. Neurosurg. 4:348-69, July 1947.

9. Spine and Spinal Cord

DEFORMITIES OF DURAL POUCHES AND STRICTURES OF DURAL SHEATHS IN THE CERVICAL REGION PRODUCING NERVE-ROOT COMPRESSION.

Ragnar Frykholm, Neurosurgical Clinic, Serafimerlasarettet, Stockholm, Sweden. J. Neurosurg. 4:403-13, September 1947.

The etiology and operative treatment of brachial neuralgia is discussed. Removal of a lateral protrusion of an intervertebral disk for the relief of brachial neuralgia was unsatisfactory, probably partly because of incomplete decompression or damage of the nerve by the operation and partly because of lack of attention to certain deformities of the dural pouches and sheaths. Relief of symptoms was only obtained in 1 of 3 cases in which the nerve roots were decompressed by thorough removal of protruding calcified intervertebral disks. The dural sheaths were opened in this 1 case in order to better dislocate the nerve roots before attacking the protruded disk. The sheaths were not opened in the other 2 cases. A second operation became necessary in 1 of these for relief of pain. Cutting open the dural sheath afforded prompt relief. A constriction of the sheath at the osteum was found in both cases. Exploratory operation showed no bony compression in 2 other cases but revealed narrowed dural pouches and a stenosed ostea of the dural sheaths. In another case, there was no bony compression, the dural pouch and posterior dural sheath were absent and only part of the anterior sheath present. The nerve roots were found to be acutely angulated at their exit from the spinal canal. The angulation was eliminated by cuts in the spinal dura with prompt relief of symptoms.

The anatomy and pathology of dural pouches and dural sheaths is described in detail. The dural pouches are funnel-shaped lateral extensions of

the spinal dural cavity. The dural sheaths emerge from the bottom of the pouches. The spinal nerves leave the cord in the lower cervical region considerably above their respective intervertebral foramina and would be sharply angulated at their exit through the sheaths if it were not for the dural pouches which assure them an arched course. Each nerve root enters an individual dural sheath at the bottom of the dural pouch, the two ostea being separated by an interradicular septum. The dural sheath is thin-walled fibrous tissue but the ostium is unyielding dural tissue which sometimes becomes thickened and forms a stricture.

The operation to relieve stenosis of the osteum and remove abnormal angulation of the nerve roots consists of making a small incision in the spinal dura and extending it through the dorsal dural sheath. Another incision is then made extending anteriorly along the notch in the upper sheath-angle. This allows upward displacement of the dorsal root, bringing the interradicular septum in sight. Angulation of both nerve roots is eliminated by cutting through the septum and ventral dural sheath. The operation transposes the nerve roots.

Clinically, the deep proximal pain, muscle tenderness and spasm of brachial neuralgia are the result of compression of the ventral or motor root while numbness and paresthesias seem caused by compression of the dorsal or sensory root. It is suggested that the negative results in about 12 per cent of surgically treated cases of sciatica might be materially reduced if the possibility of pathology within as well as outside the dural sheaths were considered. 7 references. 7 figures.

THE SURGICAL RELIEF OF SPASTICITY IN PARAPLEGIC PATIENTS. I. ANTERIOR RHIZOTOMY.

L. Willard Freeman, Yale University School of Medicine, New Haven, Conn., and Robert F. Heimburger, Chicago Memorial Hospital, Chicago, Ill. J. Neurosurg. 4:435-43, September 1947.

In a group of approximately 700 patients with spinal cord injuries, 230 had spasticity of varying degrees. Of these, 70 required surgical relief, with 28 being subjected to anterior rhizotomy. The indications for anterior rhizotomy were: (a) marked, disabling spasm of the flexion - adduction type; (b) wasting debility; (c) severe decubitus ulcers; (d) marked hypertonicity of the bladder. The operative technic which starts with delamination of D_{12} and L_1 vertebrae requires careful identification of the roots and preservation of blood vessels. Relief was obtained in all cases with residual spasm being present in 10. This spasm was sufficient to require further surgery in 2 cases. The only complication observed was a hypotonic bladder in 1 case.

The factors contributing to the failure to obtain complete flaccidity are analyzed. They include: (1) the use of general anesthesia which interferes with testing at operation for completeness of the rhizotomy; (2) the variation in origin of the major limb nerves; (3) the difficulties inherent in

the procedure of accurately identifying the roots. Dissection in 10 cadavers revealed the last large root to be S_1 and S_2 in an equal number of instances. The largest root varied widely. The last firm dentate ligament was at D_{12} in all but one instance. Thus, accurate identification is to be insured by preoperative roentgenograms with marking of the twelfth dorsal vertebra, verification by the location of the last firm dentate ligament (D_{12}) and by the point of exit of the twelfth root, and careful counting of roots as they are severed near their points of origin. The procedure should be conducted under local anesthesia and each root should be stimulated before sectioning. In some patients, testing at operation will demonstrate the necessity for sectioning the second sacral roots. Preoperative novocaine injections of the second and third sacral nerve roots with careful cystometric observations will demonstrate the desirability of preserving or sectioning these roots. It is concluded that the procedure of anterior rhizotomy is a superior method for obtaining relief of marked spasticity seen in patients with spinal cord injuries. 11 references. 1 table.

Author's abstract.

THE PLASTIC SURGICAL CLOSURE OF DECUBITUS ULCERS IN PATIENTS WITH PARAPLEGIA.

Herbert Conway, Cornelius J. Kraissl, Robert H. Clifford, III, Jerome Gelb, Julius M. Joseph and Leo Leveridge, Veterans Administration Hospital, Kingsbridge Road, Bronx, N. Y. Surg., Gynec. & Obst. 85:321-32, September 1947.

Experience with the excision and plastic closure of decubitus ulcers in 56 paraplegic patients is described. The ulcers were all of long duration. Pressure over bony prominences is the chief cause of this condition, this producing a local anemia eventually followed by necrosis. There are various types of infection in these ulcers. The most effective local treatment has been zinc peroxide in gangrenous areas with anaerobic organisms, parachlorophenal against the Bacillus pyocyaneus and nine-amino acridine hydrochloride against most other organisms.

The patients all have a low plasma protein concentration and negative nitrogen balance and need considerable building-up before surgery. A high caloric diet and extra food is given to restore a positive nitrogen balance. The hypoproteinemia and anemia are treated by transfusions of blood, of plasma, and protein digests, and administration of vitamins B complex and C, liver extract, and iron. Local preoperative wound preparation consists of excision of slough at each dresing, daily cleaning with saline sponges and application of fine mesh gauze impregnated with xeroform ointment. Penicillin and the sulfonamides are given twenty-four hours preoperatively. These systemic measures are continued postoperatively, penicillin being given throughout this period. Frequent changes of position postoperatively are essential, the patient being turned from side to side and prone to supine. There must be no pressure against the operative area until after the first

dressing. Serious soiling of the operative area is prevented by the retention catheter, a low residue diet and ample doses of paregoric. The first enema is given the seventh day postoperatively. The dressing is first changed the sixth, seventh or eighth day and alternate sutures removed. Collections of blood clot or fluid in or about the wound are aspirated and penicillin solution instilled. The last sutures are removed the fourteenth day postoperatively.

The operation consists of completely excising the ulcer and adjacent scar and covering the area with a pad of healthy tissue having a thick layer of subcutaneous fat. Complete excision of the ulcer may be difficult. A blood transfusion is given during the operation because of the excessive bleeding from scar tissue being excised. Accurate hemostasis is essential as hematoma formation may cause complete failure of this operation. Mosquito clamps and No. 00000 plain catgut or No. 120 cotton ties are preferred to electrocoagulation for hemostasis as the latter leaves traumatized or necrotic tissue in the wound followed by an excessive accumulation of serum. A series of five operative procedures is used depending upon conditions. These are elliptic excision and closure; closure by free thick-split skin graft; and excision and closure by Z-plasty, by pedicled flap, or by pedicled flap with free graft at a distance. The flap must be adequate to fully cover the ulcer area without having suture scars over the original ulcer.

Elliptic excision and closure was only used for small ulcers. Closure by Z-plasty can only occasionally be used in these cases. Results in this series indicated that large ulcers are most often successfully closed by the use of a flap of skin and subcutaneous tissue rotated from an adjacent area, the defect at the flap site being covered by a free skin graft. This treatment healed 71 per cent of cases in this series. 15 references. 3 tables. 16 figures.

DERMATOME HYPALGESIA WITH POSTEROLATERAL HERNIATION OF LOWER CERVICAL INTERVERTEBRAL DISC.

J. Jay Keegan, University of Nebraska College of Medicine, Omaha, Neb. J. Neurosurg. 4:115-39, March 1947.

Lower cervical disk herniation is now recognized as a cause of pain that extends from the lower neck over the scapula and down the arm with associated numbness of one or more digits of the hand. The most characteristic symptom of this syndrome that distinguishes it from brachial plexus and peripheral nerve syndromes is the early location of pain over the medial scapular region associated with movement of the neck. This is similar to the "hip" or gluteal pain that characterizes herniations of lumbar vertebral disks. It is attributed by the author to early contact of the most posteriorly situated fibers of the posterior primary division of the nerve root against ligamentum flavum or lamina as the root is displaced posteriorly by the herniation of the disk.

In cases of cervical disk herniation involving a single nerve root, the author has demonstrated that definite areas of dermatome hypalgesia can be

found by the use of a simple test. This consists in very lightly drawing a nearly vertical pin point over the skin, so that the patient notices that the pin scratch causes no pain in the area studied. The patient can usually indicate fairly accurately the distribution of root pain and the area of subjective numbness in the fingers, showing the areas to be tested and the uninvolved neighboring areas by the pin scratch method.

Using this method, the author has demonstrated areas of dermatome hypalgesia in 51 cases with a history and clinical syndrome indicating compression of a lower cervical nerve root by herniation of an intervertebral disk, showing a diagnostic dermatome pattern for each of the fourth, fifth, sixth, seventh and eighth cervical nerve roots; and also has demonstrated the distribution of the anterior primary division of the first thoracic nerve in 8 additional cases of cervical rib or scalenus anticus syndrome. The existence of the lesion has been verified surgically in 13 cases. And the findings have been further confirmed by novocaine injections of individual nerve roots, controlled by roentgen ray in 10 medical student volunteers. In the cases not verified surgically the areas of dermatome hypalgesia for each nerve root were similar to those surgically or experimentally verified, and the clinical syndromes were also similar. Illustrative cases of each type are reported. 22 references. 1 table. 10 figures (including a complete dermatome chart of the human body).

END-RESULT STUDY OF THE INTERVERTEBRAL DISC.

Raymond E. Lenhard, Baltimore, Md. J. Bone & Joint Surg. 29:425-28, April 1947.

All low-back pain, with or without sciatic pain, is believed to be caused by abnormality or injury of the intervertebral disk. The end results obtained in a series of 843 patients operated upon by a neurosurgeon with removal of the injured disk after excision of the ligamentum flavum on the side of the sciatic pain are reported. Roentgenograms were found not to be accurate in localization of lesions.

These operations were divided into three series. The loose fragment or sequestrum was removed in the first; a curettage or removal of the entire disk was done in the second and multiple disks were recognized and entirely removed in the third. It was felt that the best results would be obtained by this last procedure but it was found that results were not dependent upon the type of operation.

Questionnaires were sent to all patients one to four years after operation and 147 returned for examination. Results were classified as good, improved and unimproved. Good results included patients in excellent condition as well as those greatly improved and not incapacitated but with some residual complaints such as stiffness of the back, slight numbness in the foot or leg and backache after much activity. Improved cases had less pain and disability than before operation but still had sufficient complaints to restrict activity and cause loss of time. Unimproved cases were the same or worse

than before operation. Good results were obtained in 67.5 per cent of the patients examined; 17 per cent were improved and 15.5 per cent were unimproved. Some of the patients examined who had residual complaints could have been helped by fusion or physical therapy. 3 references. 6 tables.

EXTRAMEDULLARY SPINAL CORD TUMORS.

Gilbert Horrax, Lahey Clinic, Boston, Mass. S. Clin. North America 27:535-53, June 1947.

Extramedullary spinal cord tumors generally produce two kinds of symptoms, namely, those caused by local compression of the spinal nerve roots at the level of growth and later those caused by pressure on the spinal cord. At the outset the various kinds of pain from involvement of one or more nerve roots may simulate many conditions. In the cervical level some of the more common conditions necessitating differential diagnosis include cervical rib, ruptured cervical disks, bursitis, brachial neuritis, cardiac lesions and cervical arthritis. Tumors in the region of the thoracic nerve roots may also cause pain suggesting cardiac lesions as well as acute abdominal conditions like gallbladder and kidney colic or appendicitis. The pain may be of sciatic distribution when the cauda equina is compressed by a tumor, suggesting a ruptured intervertebral disk, pelvic tumor compressing the sciatic nerve, sacroiliac disease or a form of neuritis.

The differential diagnosis in most of these cases is not too difficult. There should be a careful chronologic history and neurologic study. Roentgenograms of the spine are taken to detect any bony erosion, and if negative, a lumbar puncture should be done to determine the possibility of a subarachnoid block and to compute the total protein contents of the spinal fluid. In a complete block the fluid is xanthochromic and the total protein may reach 1,000 to 4,000 mg. per 100 cubic centimeter. In some cases it is necessary to introduce a contrast medium into the subarachnoid space and then determine by roentgenograms the upper or lower border of the lesion. In a complete block oxygen or air is preferred for contrast. Contrast media re indicated only when the exact location of a tumor cannot be determined by other means. Since cord compression may follow lumbar puncture, the puncture should be done only if facilities are available for an immediate laminectomy.

The sole treatment of extramedullary spinal cord tumors is complete removal. This can be accomplished in most cases, except for the extensive giant cell tumors of the cauda equina and the meningiomas of the upper cervical cord as well as of the medulla and the lower group of cranial nerves, but even these at times may be removed completely. Laminectomy as a method for complete removal of these tumors carries a minimal risk. Seven case histories are reported. 15 figures.

ON DISLOCATION AND FRACTURE-DISLOCATION OF THE SPINAL COLUMN.

R. Ingebrigtsen, University of Oslo, Oslo, Norway. Acta chir. Scandinav. 94:455-69, No. 5, 1946.

Immediate reduction under local anesthesia was done on 5 patients. Three died (complete transverse lesions; in 2 cases, complete destruction of the spinal cord). The fourth patient, with the same type of lesion (twelfth thoracic vertebra) recovered, except for some slight spasticity of the legs. Now, thirteen years later, he is working as a chauffeur. The fifth patient (fracture-dislocation in the cervical region of the spinal column) who was treated as above after a delay of fifty-five days, developed in the meantime pyramidal lesions and severe paresis, yet now, thirteen months after the accident, he is able to walk 13 kilometers in one day, handles tools and writes well. In the sixth case, a mild one, the patient was left without treatment, to test the extent of injury, with subsequent open reduction. The author concludes that open reduction is efficient in saving the healthy remains of the injured portion of the spinal cord. 16 references. 13 figures.

References to Current Articles

Anatomicophysiological Aspects of Injuries to the Intervertebral Disc. Verne T. Inman and J. B. De C. M. Saunders, San Francisco, Calif. J. Bone & Joint Surg. 29:461-75, April 1947.

Low Back Pain. J. D. Paulett, Postgraduate Medical School of London, London, England. Lancet 2:272-76, Aug. 23, 1947.

Klippel-Feil's Syndrome Associated with Compression of the Spinal Cord by an Extradural Hemangiolipoma. Paul C. Bucy and Hardin Ritchey, University of Illinois College of Medicine, Illinois Neuropsychiatric Institute, and Chicago Memorial Hospital, Chicago, Ill. J. Neurosurg. 4:476-81, September 1947.

The Disc Factor in Low Back Pain With or Without Sciatica. J. Grafton Love, Mayo Clinic, Rochester, Minn. J. Bone & Joint Surg. 29:438-47, April 1947.

Idiopathic Low Back Pain and Sciatica. 25 Years Ago and Now. J. Albert Key, Washington University, St. Louis, Mo. Bull. Johns Hopkins Hosp., 80:217-30, May 1947.

Ruptured Intervertebral Disc and Sciatic Pain. Joseph S. Barr, Boston, Mass. J. Bone & Joint Surg. 29:429-37, April 1947.

Symposium on the Intervertebral Disc. (Introduction). Arthur G. Davis, Erie, Pa. J. Bone & Joint Surg. 29:424-25, April 1947.

An Analysis and Differentiation of Low-Back Pain in Relation to the Disc Factor. Arthur Steindler, Iowa City, Iowa. J. Bone & Joint Surg. 29: 455-60, April 1947.

Pathological Studies of Intervertebral Discs. Charles Eckert and Alfred Decker, Washington University School of Medicine and Barnes Hospital, St. Louis, Mo. J. Bone & Joint Surg. 29:447-34, April 1947.

Spina Bifida Aperta and Congenital Stricture of the Spinal Canal. Münir A. Sarpyener, Clinic of Infantile and Orthopaedic Surgery, Istanbul, Turkey. J. Bone & Joint Surg. 29:817-21, July 1947.

Laminectomy and Foraminotomy with Chip Fusion. Henry Briggs and Sidney Keats, New Jersey Orthopedic Hospital and Dispensary, Orange, N. J. J. Bone & Joint Surg. 29:328-34, April 1947.

Protruded Intervertebral Disc. H. H. Hepburn, Edmonton, Alta., Canada. Canad. M. A. J. 57:273-76, September 1947.

Roentgenology of the Spine in Industry. Albert B. Ferguson, Brookline, Mass. Am. J. Surg. 74:246-57, September 1947.

Back Injuries in Industry. John D. Adams and G. Kenneth Coonse, Boston, Mass. Am. J. Surg. 74:258-69, September 1947.

Operative Indications in Trauma to the Low Back. Philip D. Wilson and L. Ramsay Straub, New York, N. Y. Am. J. Surg. 74:270-81, September 1947.

The Role Of The Dentate Ligaments in Spinal Cord Compression and the Syndrome of Lateral Sclerosis. Edgar A. Kahn, University Hospital, Ann Arbor, Mich. J. Neurosurg. 4:191-99, May 1947.

Staphylococcal Osteomyelitis of Spine in a Baby Aged Three Weeks. P. G. Finch, London, England. Lancet 2:134-35, July 26, 1947.

Postoperative Spinal Adhesive Arachnoiditis and Recurrent Spinal Cord Tumor. Leo M. Davidoff, Harvey Gass and Jacob Grossman, Montefiore Hospital and Columbia University College of Physicians and Surgeons, New York, N. Y. J. Neurosurg. 4:451-64, September 1947.

Arachnoidal Proliferations with Cyst Formation in Human Spinal Nerve Roots at Their Entry Into The Intervertebral Foramina. Preliminary Report. Bror Rexed, Karolinska Institute, Stockholm, Sweden, J. Neurosurg. 4:414-21, September 1947.

Modern Concepts of Neurosurgical Treatment of Herniated Nucleus Pulposus. Donald E. Stafford, Seattle, Wash. Northwest Med. 46:358-60, May 1947.

Sacral Agenesis. Report of a Case. Alexander Lichtor, University of Wisconsin Medical School, Madison, Wis. Arch. Surg. 54:430-33, April 1947.

10. Peripheral Nerves

THE TREATMENT OF INJURIES OF THE BRACHIAL PLEXUS.

Loyal Davis, John Martin and George Perret, Northwestern University Medical School, Chicago, Ill. Ann. Surg. 125:647-57, May 1947.

Results of study of 47 cases of injury to the brachial plexus, 30 by high velocity missiles or stab wounds and 17 by blunt instruments, are presented. The entire affected extremity is usually anesthetic and paralyzed immediately after the injury. Physiologic lesions may promptly recover but it is most important that systematic physiotherapy be promptly commenced in all types of brachial plexus injury and continued as long as necessary,

sometimes years. Splinting, massage, passive and active movements should be used in endeavor to prevent contractures and deformities. Surgery is recommended as soon as the acute injury to the soft tissues has subsided, physical therapy being fully employed in the interval, as functional recovery is then much better. Scar tissue becomes denser with delay and eventually stops any possibility of nerve regeneration. Muscle atrophy and joint changes occur so that plastic operations upon the tendons or joints are finally the only hope to restore function. Nerves should be freed from surrounding scar tissue insofar as possible, the scar tissue being resected and end to end nerve anastomoses made where indicated. Nerve grafts are used where this is impossible or when there is loss of nerve substance. Fresh homogenous grafts are used when suitable autogenous grafts are unavailable. Nerve injuries should be located by electrical stimulation at operation. Complete avulsion of nerve roots cannot be repaired. When nerve repair cannot be done, tendon shortening or tendon transplants provide optimum usefulness of the extremity. Results of surgery in injuries of the brachial plexus are not as good as with peripheral nerves because regeneration may require several years. Furthermore, neurolysis and nerve suture cannot be as well accomplishd upon the plexus as upon a single nerve trunk. In this series, 17 neurolyses and 29 sutures were done. 8 references. 1 table. 5 figures.

SUTURE OF WAR INJURIES TO PERIPHERAL NERVES. CLINICAL STUDIES OF RESULTS.

G. af Bjorkesten, Helsingfors, Sweden. Acta. chir. Scandinav. 95:171 pp., Suppl. 119, 1947.

The history of peripheral nerve suture is reviewed and investigations made of 12 primary and 744 secondary nerve sutures to determine results of individual nerve suture and to what extent this is affected by extraneous factors. Function first returns to the flexors and extensors of the wrist and ankles or muscles proximal to them, then to the fingers and toes and to the small muscles of the hand and foot last. Signs of recovery appear first in medium high injuries, then high and then low, the latter being considerably delayed. The shortest time for restoration was six and one-half and seven months respectively for the tibial and radial nerves. An observation period of at least a year is required to determine an approximately definite positive result and a permanent qualitative result is not determined until after two years.

A simultaneous fracture affects the results unfavorably because of the time required to heal the fracture before operation. Primary nerve suture is not usually done in war injuries because postoperative infection is frequently sufficiently severe to spoil the result. Positive results were obtained in 89.8 per cent of secondary nerve sutures operated upon within three months of injury. This incidence gradually declined to 71.7 per cent for cases not operated until more than a year after injury. Nerve suture is facilitated in nerves having a considerable difference in diameter by ob-

liquely sectioning the peripheral stump to make the cut ends about the same size. The effect of size of the nerve defect upon the ultimate result is affected by many secondary factors difficult to eliminate and results are poorer than in small defects. Rotation of the peripheries of cut nerve ends makes no practical difference in the result.

Linen sutures have been found two and one-half years after insertion but silk sutures disappeared within six months. A suture inserted under tension is more liable to secondary rupture than one without tension. Nerve stretching at operation was not harmful if done moderately. Positive results are sometimes obtained by using a two-stage operation when the nerve ends cannot be approximated at the first operation but so much stretching is sometimes caused that the nerve ends cannot stand it.

Transposing the ulnar nerve to the front of the medial epicondyle facilitates the suture though the function of the flexor carpi ulnaris sometimes does not return because motor branches to that muscle are damaged when the nerve is freed. The suture line is usually embedded in adjacent muscle, free transplants wrapped around the suture only being used in occasional badly scar-infiltrated cases. Wound infection affects secondary much less than primary suture. Experience showed that postoperative immobilization should not be continued more than four weeks. The final result is largely dependent upon the absence of contractures and the mobility maintained by the joints of the affected extremity. Patients must be trained to cooperate in the maintenance of full passive mobility of the paralyzed limbs. Electrical treatment is only considered to be partly warranted by its effect on muscle atrophy but it has a valuable psychologic effect upon the patients. 288 references. 44 tables. 30 figures.

PERIPHERAL INJURIES TO THE SPINAL ACCESSORY NERVE.

A. Norden, The Serafimer Hospital, Stockholm, Sweden. Acta chir. Scandinav. 94:515-32, No. 4, 1946.

The pain accompanying peripheral lesions of the spinal accessory nerves is regarded by the author as an important subject for study, because of its invalidizing effect. Of 16 cases treated surgically, 15 were postoperative complications (mostly lymphomas in the neck region). The mechanism of pain is assumed by the author to be as follows: the pain starts in the shoulder, due to paresis of the trapezius and consequent lowering of the shoulder. The sensation of pain is then radiated down the arm and down the back, reaching the scapula. Tension of the plexus brachialis is supposed to be the cause. Treatment consisted in suturing the nerve if the injury was fresh. Orthopedic therapy was applied to old injuries. Suturing (4 cases) gave 2 complete recoveries; the other 2 patients showed no change. Of the 16 patients 2 remained incapacitated, 2 were able to do light work only, 8 were able to work but the pain persisted, 3 had moderate pain and 2 were relieved of pain and regained full working capacity, in spite of pronounced original paresis. 9 references. 1 table.

UNILATERAL FRONTAL HYPERHIDROSIS RELIEVED BY SUPRAORBITAL NERVE SECTION.

I. M. Tarlov and Ernst Herz, New York, N. Y. J. A. M. A. 133:476-77, Feb. 15, 1947.

A case of circumscribed hyperhidrosis over the left side of the forehead is described. After section of the supraorbital nerve the hyperhidrosis was abolished almost completely. The area of disturbed sweating was clearly outlined by measurement of the electrical skin resistance. The result of the operation, which consisted solely of resection of the supraorbital nerve with preservation of the adjacent artery, confirms the conclusions of List and Peet with reference to the course of the sweat fibers to the forehead. The autonomic fibers from the superior cervical ganglion finally join the branches of the trigeminal nerve shortly before their points of exit through the skull. After section of the supraorbital nerve the interruption of sweating and sensory function in the corresponding area was complete. Sensation was partly restored four months after the operation. 2 references. 5 figures.

References to Current Articles

Recovery of Stretch Reflexes After Nerve Injury. D. Barker and J. Z. Young, University College, London, England. Lancet 1:704-707, May 24, 1947.

Differences in the External Outlines of Nerves, Veins and Fasciae (*Razlichiya vo vneshnem ochertanii nervov, ven i fastiĭ*). M. A. Sreseli, The Kirov Military Naval Academy, U.S.S.R. Khirurgiya No. 3, 13-18, 1947.

Surgical Anatomy of the Radial Nerve and the Method of Shifting its Location in Extended Defects of this Nerve (*K khirurgicheskoĭ anatomii luchevogo nerva i metodike peremeshcheniya ego pri bol'shikh defektakh*). A. S. Lur'e, The Burdenko Institute of Neuro-Surgery, Academy of Medical Science, U.S.S.R. Khirurgiya No. 2, 73-80, 1947.
July 1947.

The Immediate Care of Nerve and Tendon Injuries. Sumner L. Koch. Surg., Gynec. & Obst. 85:368-71, September 1947. An editorial emphasizing the importance of prompt treatment in such injuries.

Observations on Obscure Mechanisms of Nerve-Root Compression with a Diagnostic Tap Test. Henry Briggs and Sidney Keats, New Jersey Orthopedic Hospital, Orange, N. J. J. Bone & Joint Surg. 29:758-59, July 1947.

Observations on the Treatment of Nerve Injuries, With an Account of a New Series of Splints. Robert S. Lawson, Melbourne, Australia. Australian & New Zealand J. Surg. 16:238-47, April 1947.

Strength-Interval Curves and Repetitive Stimuli in Electrodiagnosis. Lewis J. Pollock, James G. Golseth (Lt. (j.g.), M.C., U.S.N.R.) and Alex. J. Arieff. Northwestern University Medical School, Chicago, Ill. Surg., Gynec. & Obst. 84:1077-82, June 1947.

Method For Repair of Posterior Tibial Nerve. Frank F. Allbritten, Jr.

(Major, M.C., A.U.S.), Philadelphia, Pa. Am. J. Surg. 73:588-91, May 1947.

Surgical Approach to the Tibial Nerve Below the Popliteal Fossa. Anthony M. DeAngelis (Major, M.C., A.U.S.). Am. J. Surg. 73:568-77, May 1947.

Diagnosis and Management of Peripheral Nerve Injury. E. S. Gurdjian and J. E. Webster, Detroit, Mich. Am. J. Surg. 74:359-67, September 1947.

An Instrument for Direct Nerve Stimulation. James G. Golseth and James A. Fizzell, Northwestern University Medical School, Chicago, Ill. J. Neurosurg. 4:393-96, July 1947.

How Long Should an Extremity be Immobilized After Nerve Suture? I. M. Tarlov, New York, N. Y. Ann. Surg. 126:366-76, September 1947.

Physiotherapy in War Injuries of Peripheral Nerves. Uy. Tarasevich, M. Freidin and A. R. Shugam. Am. Rev. Soviet Med. 4:391-96, June 1947.

Surgery of the Peripheral Nerves. Practical Consideration of Modern Technics. George S. Baker, Mayo Clinic, Rochester, Minn. S. Clin. North America 27:978-86, August 1947.

Effects of Galvanic Stimulation on Limb Volume in Nerve Injuries. James E. Bateman, Toronto, Ont., Canada. Canad. M. A. J. 56:627-30, June 1947.

Tumors of Peripheral Nerves. Kenneth E. Livingston and Nelson Hastings, Lahey Clinic, Boston, Mass. S. Clin. North America 27:554-60, June 1947.

Spontaneous Regeneration of Severed Nerves. Lewis J. Pollock, James G. Golseth, Frank Mayfield, Alex J. Arieff and Erich Liebert, Northwestern University Medical School, Chicago, Ill. and Y. T. Oester (Capt., M.C., A.U.S.), Percy Jones General Hospital. J. A. M. A. 134:330-33, May 24, 1947.

Experiences in the Use of Cellophane as an Aid in Tendon Surgery. A. W. Farmer, Toronto Hospital for Sick Children, Toronto, Ont., Canada. Plast. & Reconstruct. Surg. 2:207-13, May 1947.

11. Sympathetic Nervous System

THE SURGICAL TREATMENT OF ESSENTIAL HYPERTENSION.

James L. Poppen and Charles Lemmon, Lahey Clinic, Boston, Mass. J. A. M. A. 134:1-9, May 3, 1947.

Use of the operation of thoracolumbar sympathectomy in the treatment of essential hypertension has been sufficiently successful to indicate the desirability of surgery in selected cases. Results of the treatment of 100 consecutive cases of hypertension by this operation are discussed. The sympathectomy originally extended from the ninth thoracic to the second lumbar ganglion but now includes the third or fourth thoracic to the second lumbar ganglion. The operation is described.

There are no absolute indications in the selection of patients for this

operation, the decision being based on a combination of various factors. History and age of the patient and longevity of blood relatives are important. Operation is advised in progressive essential hypertension in persons under 50 years of age who have ocular fundi of grades 2,3 or 4 and whose general condition is favorable. Patients with grade 4 fundi should be operated upon as soon as practicable if there is no serious cardiorenal disease. Contraindications are severe cardiac or renal disease, severe retinal arteriosclerosis or an apparently fixed type of high blood pressure. Cerebrovascular accidents have been shown not to be in themselves a contraindication. Hemiplegia is not a contraindication if the patient is otherwise a good risk. Coronary thrombosis is a definite contraindication but patients with angina pectoris gallop rhythm or auricular fibrillation may be operated upon cautiously

Results are considered good if the patient is symptomatically relieved and is in good condition with a blood pressure at what is generally considered a nondangerous level. The blood pressure is somewhat higher in fair results while unsatisfactory cases have no reduction in blood pressure. In this series, good results were obtained in 47 per cent, fair in 24 and unsatisfactory in 22 per cent of patients. The case mortality was 1 per cent while 6 per cent died after discharge from hospital. 17 references. 10 tables. 1 figure.

SURGICAL CONSIDERATIONS OF THE TREATMENT OF HYPERTENSION.

Winchell McK. Craig and Kenneth H. Abbott, Mayo Clinic, Rochester, Minn. Ann. Surg. 125:608-17, May 1947.

Hypertension may be secondary and primary or essential. The former is a result of other pathologic conditions but little is known of the cause of essential hypertension. Medical treatment is adequate for mild but not for severe cases. Extensive sympathectomy and splanchnicectomy have been showed to adequately relieve severe hypertension provided irreversible changes have not occurred in the heart, kidneys, brain and other organs.

Patients must be selected for this operation to obtain the best results. Those who have had a sustained high blood pressure for a long time and those over 50 years of age with a high diastolic pressure are poor surgical risks. The operation is beneficial by physiologic rather than pathologic action, the object being to remove nerves of the vascular system of the abdominal viscera, the so-called splanchnic vascular bed, and not some pathologic condition. The operation employed for relief of hypertension has gradually advanced from the original rhizotomy until now a combined subdiaphragmatic and supradiaphragmatic or a transdiaphragmatic operation is done with resection of one or more ribs beginning with the twelfth, division of the diaphragm, and maximum removal of the splanchnic nerves and sympathetic ganglia from the first thoracic nerve to the fifth lumbar ganglion. The more extensive operations have the disadvantage of producing discomfort through an absence of sweating in all extremities and excessive sweating of the unaffected body area.

Satisfactory results from this operation are of two kinds: a definite lowering of the systolic and diastolic pressures for a varying time or a decided relief of symptoms without any special change in blood pressure. While beneficial results of this operation may not be permanent, properly selected patients receive a real benefit for an indefinite time. 18 references. 1 table. 1 figure.

CUTANEOUS AREAS DENERVATED BY UPPER THORACIC AND STELLATE GANGLIONECTOMIES DETERMINED BY THE ELECTRICAL SKIN RESISTANCE METHOD.

Curt P. Richter, Phipps Psychiatric Clinic, The Johns Hopkins Hospital, Baltimore, Md. J. Neurosurg. 4:221-32, May 1947.

Denervated areas of skin were outlined with the electrical skin resistance method in 25 patients with upper thoracic sympathectomies and in 6 patients with stellate ganglionectomies. Five different types of upper thoracic sympathectomies were included, involving different approaches and the removal of different ganglia. Only 6 of 51 upper thoracic sympathectomies failed to fully denervate the hands. Very few of the upper thoracic sympathectomies or stellate ganglionectomies fully denervated the face. In most instances the central part of the face, which normally showed a low skin resistance, showed only a small increase in skin resistance or none at all. The stellate ganglionectomies showed the widest range of variation in the areas that they denervated. The successful denervation of the hand appears to depend largely on the removal of the second thoracic ganglion since all operations which denervated the hand included this ganglion and in two instances, the removal of this ganglion alone fully denervated the hand. The patterns of high electrical skin resistance remained quite constant from day to day, except in a small number of patients, who showed temporary patterns of abnormally low rather than high skin resistance patterns over denervated areas. The outlines of these hyperactive areas coincided exactly with the denervated areas that were found later in the same patients. 12 references. 6 figures.

Author's abstract.

References to Current Articles

Denervation of the Renal Stem. Effect on the Motor Function of the Duodenum (*Vliyanie denervatsii pochechnoĭ nozhki na motornuyu funktsiuy devenadtsatiperstnoĭ kishki*). M. B. Borisov. Khirurgiya No. 1, 22-27, 1947. Experiments on dogs have demonstrated that resection of the vegetative innervation of the renal stem leads to motor dysfunction of the stomach and the duodenum (gastric atonia, slow peristalsis, open sphincter, dilated duodenum). It is concluded that megacolon, megagaster, megacystis, etc., may be caused by the pathologic changes in the peripheral innervation or the vegetative centers.

Vasomotor Disturbances in Poliomyelitis, With Special Reference to Treat-

ment with Paravertebral Sympathetic Block. Vincent J. Collins, (Major, M.C., A.U.S.), William L. Foster (1st Lt., M.C., A.U.S.) and William J. West (Capt., M.C., A.U.S.), Hot Springs, Ark. New England J. Med. 236:694-97, May 8, 1947. Vasomotor disturbances, such as edema, hyperhidrosis, coldness and chilblains, are frequently encountered in the convalescent period of poliomyelitis. Pain, muscle spasm and muscle tenderness were completely relieved in 3 cases by sympathetic nerve blocks and without supplementary therapeutic measures, such as physiotherapy and hot packs. It is suggested that the pain, tenderness and muscle spasm in the acute phase of poliomyelitis may also be alleviated by sympathetic blocks. 7 references. 1 table.

Medical Evaluation of the Surgical Treatment of Hypertension. Robert Sterling Palmer, Massachusetts General Hospital, Boston, Mass. J. A. M. A. 134:9-14, May 3, 1947.

Renin, Hypertensinogen, and Hypertensinase Concentration of Blood of Dogs During the Development of Hypertension by Constriction of the Renal Artery. Florence W. Haynes and Lewis Dexter, Peter Bent Brigham Hospital and Harvard Medical School, Boston, Mass. Am. J. Physiol. 150:190-97, July 1947.

Renin Content of Renal Venous Blood of Normal and Hypertensive Patients at Rest. Florence W. Haynes, Lewis Dexter and Roy E. Seibel, Peter Bent Brigham Hospital and Harvard Medical School, Boston, Mass. Am. J. Physiol. 150:198-201, July 1947.

Extensive Combined Thoracolumbar Sympathectomy in Hypertension. James L. Poppen, The Lahey Clinic, Boston, Mass. Surg., Gynec. & Obst. 84: 1117-23, June 1947.

Control of Peripheral Blood Flow. Responses in the Human Hand When Extremities are Warmed. B. G. Ferris, Jr., R. E. Forster, II, E. L. Pillion and W. R. Christensen, U. S. Army Quartermaster Corps Climatic Research Laboratory, Lawrence, Mass. Am. J. Physiol. 150:304-14, August 1947.

Pregnancy Following Lumbodorsal Splanchnicectomy for Essential and Malignant Hypertension and Hypertension Associated with Chronic Pyelonephritis. John L. Newell and Reginald H. Smithwick, Harvard Medical School and Boston University School of Medicine, Boston, Mass. New England J. Med. 236:851-58, June 5, 1947.

Presacral Neurectomy in Treatment of Primary Dysmenorrhea. Libering Patricelli, Seattle, Wash. Northwest Med. 46:677-80, September 1947.

The Effect of Dibenamine on Autonomic Stimulation. F. A. Simeone and S. J. Sarnoff, Boston, Mass. Surgery 22:391-401, August 1947.

Sympathetic Nerve Block in Hypertension and Allied Cases. Lawrence V. Lindroth, Christ Hospital, Jersey City, N. J. Am. J. Surg. 74:66-68, July 1947.

The Question of Regeneration of Nerve Fibers to the Human Adrenal Gland After Bilateral Sympathectomy. Herman C. B. Denber, New York, N. Y. Ann. Surg. 126:332-39, September 1947.

Painful Stimuli in Causalgia. V. Rusinov. Am. Rev. Soviet Med. 4:436-39, June 1947.

Early Clinical Results of Transabdominal Celiac and Superior Mesenteric Ganglionectomy, Vagotomy, or Transthoracic Splanchnicectomy in Patients with Chronic Abdominal Visceral Pain. K. S. Grimson, F. H. Hesser and W. W. Kitchen, Durham, N. C. Surgery 22:230-39, August 1947.

12. Head and Neck

TUMORS OF THE CAROTID BODY.

Frank H. Lahey and Kenneth W. Warren, The Lahey Clinic, Boston, Mass. Surg., Gynec. & Obst. 85:281-88, September 1947.

There are two carotid bodies located near the bifurcation of each carotid artery. Both benign and malignant tumors occasionally develop in them. Biopsy specimens are important for differential diagnosis. The diagnostic features and problems involved in the surgical removal of these tumors in a series of 18 cases are discussed. The most common differentiation required is between a carotid body tumor and branchial cyst. The tumors are more deeply located and originate at a higher level than branchial cysts and enlarge upward under the angle of the jaw. Single lateral aberrant thyroid tumors are also confusing but do not tend to enlarge similarly upward.

Ligation of the internal, external or common carotid artery may be necessary in connection with surgical removal of carotid body tumors. Preliminary compression of the carotid artery on the same side of the neck as the tumor should therefore be made until the patient can stand complete obliteration of the artery for ten minutes three times a day. This is only useful however when positive symptoms are produced. An absence of symptoms is not dependable. Fatalities occurred in 2 of 6 patients requiring carotid ligation in spite of the fact that they could stand this compression without symptoms. This test therefore is considered indicative only.

Complete surgical excision is the ideal treatment for carotid body tumors but the risks of carotid ligation, which is necessary in about half the cases, is so great that the procedure is unjustifiable routinely. It is estimated that only 15 to 20 per cent of these tumors are malignant. They grow slowly and the malignancy is low grade when it does occur. About 75 per cent are symptomless except for cervical swelling and the other 25 per cent have mild symptoms, syncope and other serious manifestations being rare. A wide variety of symptoms may occur from invasion of other cervical tissues. Operation for carotid tumor in a series of 148 cases had a 24 per cent mortality and 30 per cent for those having carotid ligation. Reports of recurrence after operation vary from 7 to 25 per cent. Results of nonsurgical therapy are generally unsatisfactory but good results have been reported from irradiation.

It is believed that surgical removal with ligation of one of the carotid arteries should only be done when biopsy has shown definite malignancy to be present. Carotid ligation should be accompanied by internal jugular ligation and the patient kept in the head down position in an oxygen tent for some time after operation. Removal of small tumors not surrounding the carotid vessels is justified and removal must be attempted when they interfere with swallowing. 8 references. 6 tables. 6 figures.

(*One should consider gradual closure of the common carotid by means of bands, etc. (Halsted) before removal of tumor. Time is not important*—D. V. T.)

TUMORS OF THE NECK.

Frank H. Lahey, Lahey Clinic, Boston, Mass. S. Clin. North America 27:486-500, June 1947.

Tumors of the neck are divided into: (1) those arising in the midline; (2) those arising laterally; (3) those which are single and discrete and those which are multiple.

Median line tumors are practically limited to those of thyroid origin. The thyroglossal tract which normally is obliterated plus the failure of descent to the thyroid produces median line tumors and cysts. If the thyroid gland fails entirely to descend, a lingual goiter results. These require removal only when they interfere with swallowing. The intralingual and supralingual types can be approached through the mouth, whereas the sublingual thyroids must be approached from below. Thyroglossal cysts and sinuses originate in the thyroglossal tract and are always in the midline. There should be complete removal of the cyst and the central part of the hyoid, and following of the cyst tract up to the base of the tongue. In median line adenomas of the thyroid the patients complain of choking as they bend over or elevate their arms. All discrete adenomas should be removed because of possible malignancy.

Single, discrete, laterally located tumors, particularly of the movable variety, are important because they may become malignant. They include branchial cysts, carotid body tumors, single, discrete, lateral aberrant thyroid tissue, and neurofibromas. The most common single movable swelling is the branchial cyst which should be removed. The best method of treating branchial sinuses is by subcutaneous dissection of the tract to the point where it disappears beneath the hyoid. Lateral aberrant thyroid tissue is easily demonstrated on microscopic study and should be radically removed, followed by high voltage roentgen therapy. Carotid body tumors are rare but constant in their location. One diagnostic feature is that on traction they cannot be made to descend. They are deeply located. Their removal should be predicated on the ability to dissect them free without injuring the carotid vessels. The neurofibromas have no special characteristics and are diagnosed by microscopic examination. They occur wherever nerve tissue is present.

Multiple tumors and cysts of the neck include tuberculous cervical

lymph nodes, Hodgkin's disease, metastatic glands of the neck originating from carcinoma of the lung or of the stomach, multiple lateral aberrant thyroids, deep cervical abscesses, discrete extrathoracic and intrathoracic adenomas of the thyroid and cystic hygromas. Tuberculous cervical adenitis can be diagnosed by demonstration of the organism or by microscopic section and can be treated effectively by irradiation. The multiple tumors of Hodgkin's disease are diagnosed positively only by microscopic examination. The feature which characterizes intrathoracic goiter or adenoma of the thyroid is the fact that it ascends and descends with swallowing. When lateral aberrant thyroids are suspected they should all be operated upon. When they have degenerated into papillary adenocarcinoma, more radical resection of the entire neck should be done. These tumors are extremely radiosensitive. 4 references. 9 figures.

(*Branchial cysts may be deeper than just subcutaneous. Many have no relationship with the hyoid bone.*—D.V.T.)

References to Current Articles

Roentgen Therapy in Cancer of the Larynx. Maurice Lenz, New York, N. Y. J. A. M. A. 134:117-21, May 10, 1947.

Treatment of Cancer of the Face, Mouth and Neck with Irradiation. Charles L. Martin and Carleton Wright, Dallas, Tex. J. A. M. A. 134: 861-67, July 5, 1947.

Management of Multiple Compound Facial Wounds Caused by Whirling Airplane Propeller. Michael Gurdin (Comdr., M.C., U.S.N.R.), U.S. Naval Hospital, Oakland, Calif. Am. J. Surg. 73:602-605, May 1947.

The Surgical Treatment of Paralytic Stenosis of the Larynx. Louis H. Clerf, Philadelphia, Pa. Plast. & Reconstruct. Surg. 2:326-30, July 1947.

The Management of Anesthesia for Surgery of the Neck. Edwin R. Ruzicka and Urban H. Eversole, Lahey Clinic, Boston, Mass. S. Clin. North America 27:517-29, June 1947.

13. Oral Surgery

SHOULD THE NECK NODES BE DISSECTED IN PATIENTS WITH CARCINOMA OF THE LIP?

Roy D. McClure and Conrad R. Lam, Henry Ford Hospital, Detroit, Mich. Ann. Surg. 125:658-61, May 1947.

Review of the medical records of 79 carcinomas of the lip and 97 squamous cell carcinomas of other parts of the face and head again showed the rarity of carcinoma of the upper lip and carcinoma of the lip in women though 42 of 79 cases of cancer elsewhere on the face were in females. Carcinomas of the lip were all squamous cell tumors in this series. Ages of the lesions before treatment varied from less than three months to more than two years.

Treatment of cancer of the lip is chiefly surgical, radiation being used in a few cases and the cervical nodes occasionally radiated. Neck dissections have been limited to the suprahyoid region. No deaths have been reported in cases only treated by excision. The lymph nodes were dissected at the same operation as excision of the tumor in 27 cases of this series but only 7 were microscopically positive for cancer. Four of these patients died later of carcinoma, 1 with generalized metastases but no lip recurrence. Prophylactic dissection of neck nodes was only done in 1 case of this series, a cancer of the cheek. The nodes were found negative for carcinoma but the patient died of edema of the larynx. Ninety per cent of the other cases in this series who had not had dissection of neck nodes were well after five years. While the final answer cannot yet be stated, review of the literature and results of this study indicate that the prophylactic dissection of nonpalpable lymph nodes of the neck is not indicated in patients with small, early lip carcinoma. The neck should be regularly examined however every month for one year and every two months for two years postoperatively and the nodes dissected if a metatastic node appears. 11 references. 3 tables.

(*The fundamental surgical principles of resection of a primary malignant lesion along with regional lymph nodes should not be entirely disregarded as yet until more favorable statistical studies have been presented.*—Ed.)

SUCCESSFUL PRIMARY REPAIR OF LACERATED STENSON'S DUCT.

Ralph E. Goodall and Sarah E. Flanders, Bellevue Hospital, New York, N. Y. Surgery 21:865-69, June 1947.

Successful primary suture of Stenson's duct is reported in a 35 year old white man with multiple lacerations of the face and hands. Debridement and suture were carried out two hours after admission to the hospital. All wounds were uncomplicated except for the one in front of the left where exploration revealed complete division of Stenson's duct in the masseteric portion and division of three terminal branches of the facial nerve. The distal end of the severed duct was located by passing a small ureteral catheter through the orifice in the mouth. When the catheter emerged in the laceration, it was passed into the proximal segment of the duct. The two ends were then sutured over the catheter, interrupted sutures of fine black silk being used. Primary closure of the wound was accomplished by approximation of subcutaneous tissues with interrupted sutures of 000 plain catgut and of the skin edges with verticle mattress sutures of black silk. In order to hold the catheter in place, it was taped securely to the lower lip and a dry sterile dressing was applied. The postoperative course was satisfactory. On the eighteenth postoperative day the patient was discharged from the hospital, and when seen six months later, there was no fistula, no swelling and no tenderness of the parotid gland, and sialograms showed a normal pattern with no stenosis of the duct. It is concluded that the type of dowel is not as important as the fact that a dowel is used to maintain, but not to occlude

completely, the lumen of the duct during suturing and until healing has occurred. Adequate oral hygiene probably contributes to a satisfactory outcome. 9 references. 1 table. 5 figures.

ESTLANDER - ABBE OPERATION IN TREATING SECONDARY HARELIP DEFORMITIES AND DEFECTS OF THE UPPER LIP RESULTING FROM CANCER.

Varaztad H. Kazanjian, Boston, Mass. Plast. & Reconstruct. Surg. 2: 307-25, July 1947.

Secondary deformities in cases of cleft palate are discussed. These are not immediately apparent but develop as the child grows older and may be quite decided when adult age is reached. The upper lip and jaw are usually underdeveloped and the lower lip overdeveloped. Unevenness of the vermilion border may develop with age and the contour of the lip may be so distorted that the normal cupid's bow disappears. Nasal deformities may develop, a distorted nostril at the location of the original cleft being most common. Many changes occur in the mouths of patients with cleft palates, the most frequent being underdeveloped and distorted maxillary bones as a result of impaired growth of the maxilla. This causes irregularities of the upper teeth, a serious deformity as teeth are part of the framework of the upper lip and must be adequate. Orthodontia may eliminate or minimize this condition. Because the lower lip is always overdeveloped in these cases, surgical transfer of a section of lower lip to the upper is necessary as soon as a proper framework for the upper lip is supplied. This also improves the contour of the lower lip.

The Estlander-Abbe operation is indicated for retracted or underdeveloped upper lip or when there is a defect caused by previous surgery. It may be used in both unilateral and bilateral harelips. A local anesthetic is preferred, usually 2 cc. of 2 per cent novocaine solution with 1:50,000 epinephrine. The operations for both varieties of harelip are described in detail. Because of possible postoperative difficulties in breathing caused by blockage of the nasal cavities, a rubber tube about 1/3 inch in diameter is inserted into the mouth on each side of the flap connecting the lips as a precautionary measure. A high protein, high caloric, high vitamin diet is fed through a tube and the patient's weight recorded daily. The prolabium is frequently used to correct a short columella and raise the tip of the nose in bilateral cases or the flap may be divided in the middle and extended on each side toward the base of the nose. The second stage operation is done about two weeks after the first. A rhinoplasty is usually done with the second stage operation if required. A third operation is sometimes necessary but should be postponed about three months to allow more time for tissues to return to normal. 5 references. 29 figures.

DOUBLE CLEFTS OF THE LIP.

James Barrett Brown, Frank McDowell and Louis T. Byars, Washington University School of Medicine, St. Louis, Mo. Surg., Gynec. & Obst. 85: 20-29, July 1947.

The surgical repair of double cleft lips is about twice as difficult as in single clefts and the results are about half as good. Nevertheless, enough slow progress has been made to be worth recording and to note procedures or details to avoid.

TREATMENT OF THE PREMAXILLA

Briefly, the problem of the premaxilla is that it is nearly always too far forward in the newborn baby, but only with considerable effort can it be kept from being pushed back too far backward in the adult. It varies a good deal in size, shape and position.

As a rule, the premaxilla is not disturbed or set back if the lip can possibly be closed with it in its original position unless: (a) it is badly tilted or rotated; (b) it is so far forward that the elastic pressure of the closed lip might bend the septum and occlude the airways.

If the premaxilla is to be set back, it is set back the least possible amount necessary to allow successful closure of the lip. This is done by splitting the mucosa over the bottom of the vomer just back of the premaxilla and resecting a block of the vomer submucously. The premaxilla is set back until it is in contact with the vomer again and immobilized by a wire suture through both fragments or better by nailing a straight Keith needle directly backward through the center of the premaxilla and vomer. Any rotation or tilting is corrected at the same time and the best fixation is obtained when the premaxilla rests on the anterior surface of the two lateral processes as a bridge. The lip is then closed in a separate operation two to four weeks later.

CLOSURE OF THE LIP

The vermilion of the prolabium is not used in the vermilion of the new lip as its curvature is wrong and its use will invariably result in notching or a "whistling defect". Instead, it is dissected backward as a flap to use for extra lining.

Different designs for closure are used in different types of clefts. The most commonly used design is one in which a small Mirault flap is turned down from each lateral side and these two small flaps are united in the midline beneath the prolabium. The marking for these flaps follows the plan introduced recently for single cleft lips (Brown, J. B. and McDowell, F.: Simplified Design for Repair of Single Cleft Lips. Surg., Gynec. & Obst. 80:12, 1945). This plan results in rotation of the nostrils into proper position as well as in a good full lip of uniform length with an even vermilion clear across without notching.

LATE CARE

Any surgery on the palate is delayed until about 18 months of age to permit the tooth buds to migrate out of the palate into the alveolus and escape possible damage.

Those children who are born with a total double cleft and almost no columella will frequently require a secondary elongation of the latter at the age of 3 or 4 years. Further elevation of the nose may be obtained later, when desirable, by an "L-shaped" cartilage transplant.

Maintenance of the size and structure of the upper dental arch is important in these patients. The child's dentist is contacted early so that proper dental hygiene may be instituted and he may help later in providing or securing orthodontic care. Limited prosthodontia may be necessary in some patients with total clefts.

Those patients with cleft palates may require the assistance of speech therapists and also otolaryngologists if chronic otitis is a problem.

The plastic surgeon can render an additional service by examining these patients each year throughout the growing period and advising the parents in regard to these problems as they arise. 3 references. 16 figures.

Author's abstract.

(*This is a "classic" in the handling of double clefts of the lip.*—ED.)

EARLY TREATMENT OF MAXILLOFACIAL BATTLE CASUALTIES. A RÉSUMÉ OF FOUR HUNDRED AND TWENTY-ONE CASES.

John E. Alexander, Arlington, Va. Arch. Otolaryng. 45:637-61, June 1947.

This presentation covers the work done by a plastic maxillofacial team of an auxiliary surgical group during the period from the Normandy invasion to the end of the European phase of World War II. A detailed statistical study is presented which showed an overall mortality of 0.712 per cent. The wounds were classified according to the operative treatment carried out. No other classification was thought to be complete enough to cover all phases of injuries of this particular type. A large percentage of the soft tissue wounds when subjected to statistical analysis were found to require plastic procedures for their closure. Four hundred and seventy-two operative procedures were done on the 421 patients reported.

All face wounds were closed if possible, taking into consideration adequate drainage and absence of gross infection. As much as possible was accomplished at the first operation using plastic principles. It is emphasized that more can be accomplished at the first operation than is generally realized, and a contrast is drawn between the treatment of these cases in World War I, where the wounds of the face and neck were left open and hence closure delayed, and in World War II, where primary closure of these wounds was carried out. Penicillin postoperatively was routinely used. It was felt that this method of treatment saved many days of hospitalization and also in certain cases greatly facilitated the final definitive reconstructive work to be done.

The paper is developed along lines adhering to wound classification,

and each type of major procedure is illustrated by wash drawings made from operating room sketches by a competent medical illustrator.

Split grafting of these wounds was reserved for those cases where as sliding or rotation flap was not feasible, mainly over the nasal dorsum especially at the tip, and in areas about the orbital regions with considerable loss of the lids. This was used as a temporary expediency and was not considered a final result.

The use of well known plastic procedures for closure of defects was found valuable and interesting. All types of modifications of these principles had to be employed.

The accepted methods of treatment of fractures of the facial bones were used. Only unusual cases are specifically mentioned. An unusual fracture of the ramus of the mandible is presented in which the roentgenogram shows a large fragment producing a wide vertical separation in the ramus. The author treated this case with somewhat of an innovation which he called a horizontal circumferential wire. In cases involving the accessory nasal sinuses, special routes of drainage are described. A certain group of these cases classified as mid-segment injuries constituted a most severe and tragic entity. This injury with a description of its treatment is graphically illustrated.

High explosive fragments and projectiles lodged deep in the face and neck structures provided an interesting and challenging category. A method is described for localizing foreign bodies in the deep structures of the neck that proved useful. One case is presented with a 30-caliber machine gun bullet in the region of the foramen magnum and a method is described for its removal.

Tracheotomy was found to be indicated in all cases of injuries to the larynx, trachea, or pharynx in which a reasonable doubt existed that the patient could be transported because of an obstructed airway.

A miscellaneous group of wounds is described with their treatment, noteworthy among which are wounds involving the parotid gland and duct. Of 20 injuries involving the parotid gland only 11 showed evidence of facial paralysis. Wounds in which the proximal end of Stenson's duct were destroyed constituted a problem that remained unsolved.

Local anesthesia was extensively used and was thought to be the method of choice. Both deep and peripheral blocks were found valuable and the various trunks to which the anesthetic agents were directed are mentioned. 11 figures.

Author's abstract.

TREATMENT OF CARCINOMA OF THE LIPS.

John B. Erich. Mayo Clinic, Rochester, Minn. S. Clin. North America 27:995-1006, August 1947.

Practically all cancers of the lips are curable if diagnosed sufficiently early for proper treatment to be started before metastases occur. It is con-

sidered most important to determine the grade of activity of all lip epitheliomas because all low grade neoplasms are radio resistant.

Removal of lesions which may become malignant is recommended by surgery rather than by irradiation. No epitheliomas developed in several hundred cases whose precancerous lesions of the lips were removed. All exposed mucous membrane of the particular lip involved should be removed if possible as it gives a better cosmetic result and minimizes the likelihood of a similar lesion developing on the opposite side.

Small tumors of the upper lip may be removed by an inverted V-shaped incision and large growths by moving full thickness flaps of the cheeks across to the mid-line. This is easier than an Estlander operation. It is better to leave the wound open if the tumor is so large that most of the upper lip must be removed and reconstruct it by a forehead flap or clavicular or cervical tube flap of skin. The first provides suitable skin and is quicker.

Carcinomas not involving more than a third of the lower lip may be removed by a V-shaped incision with immediate approximation. The V-incision is sutured together when it is necessary to remove more of the lip and the narrowed mouth widened by lateral incisions extending out into the cheeks from the angles of the mouth, the cheek tissues being advanced to the midline. This increases the width of the upper lip which must then be returned to normal size by removal of a triangular portion at each mouth angle. End results are cosmetically and functionally satisfactory.

Removal of a neoplasm involving both lips and cheek cannot be followed by immediate plastic closure. A large growth of the lower lip which is attached to the periosteum or bone is removed by excising the growth with the cutting cautery and then using electrocoagulation on the underlying bone and periosteum. A bone sequestrum forms which is removed in two or three months. The resulting facial defect is reconstructed about a year later, large areas requiring a large tube flap of skin. Best results are obtained by using skin near the clavicle.

Treatment of the cervical lymph nodes is most important in these cases to prevent metastases. The best method is surgical removal of the cervical nodes. The submaxillary and submental nodes and those near the upper part of the jugular vein are the first involved and must be removed with the cervical nodes. An immediate block dissection of the deep cervical glands is done if any of the removed nodes show metastasis. The sternomastoid muscle is only removed when there is a high degree of malignancy or extensive cervical involvement. Decision to remove the cervical nodes is largely dependent upon the grade of activity of the primary tumor. They are not removed with grade 1 epitheliomas with no evidence of cervical involvement unless the lesion is badly inflamed. They are removed routinely in grades 2 or 3 tumors regardless of evidence of cervical metastasis but are not usually removed with grade 4 lesions as better results are obtained by external radiation of the neck. Irradiation rather than removal of the nodes should be considered in elderly patients and those in poor physical condition or having extensive cervical involvement. Insertion of radon seeds

in the neck of old or seriously ill patients with a single metastatic cervical node has produced good results. Supplementary external radiation is not recommended after surgical removal of nodes unless several are found involved. 1 reference. 7 figures.

(*Excellent.*—ED.)

References to Current Articles

Restoration of the Tongue by the Filatov Stem Method (*Vosstanovlenie yazyka Filatovskim steblem*). N. M. Mikhel'son, The Central Institute of Traumatology and Orthopedics, U.S.S.R. Khirurgiya No. 6, 62-63, 1947.

Reconstructive Surgery of the Dehiscent Parotid Duct and Dehiscent Peripheral Facial Nerve. Robert Charles Seeley, New York, N. Y. Am. J. Surg. 73:551-63, May 1947.

Compressive Suspension Splint for Severely Comminuted Fractures. Jacques W. Maliniac, New York, N. Y. Plast. & Reconstruct. Surg. 2:331-35, July 1947.

One-Stage Push-Back Operation for Congenital Insufficiency of the Palate. Herbert Conway, New York, N. Y. Surgery 22:341-46, August 1947.

Splints for Fractured Noses. Michael C. Oldfield and W. R. Roberts. Brit. M. J. 4511:886-87, June 21, 1947.

Tumors of the Submaxillary and Parotid Gland Areas. Samuel F. Marshall and George O. Miles, Lahey Clinic, Boston, Mass. S. Clin. North America 27:501-16, June 1947.

Malignant Growths of the Nasopharynx with Particular Emphasis on Their Frequency, Symptomatology and Diagnoses. Walter B. Hoover, Lahey Clinic, Boston, Mass. S. Clin. North America 27:577-81, June 1947.

Speech Disorders in World War II. X. Speech Defects Resulting from Maxillofacial Injuries. William G. Peacher, Syracuse, N. Y. Plast. & Reconstruct. Surg. 2:267-77, May 1947.

An Obturator for Use in Feeding Cleft Palate Cases. Raymonde A. Albray, Newark, N. J. Plast. & Reconstruct. Surg. 2:282-83, May 1947.

A Method of Minimizing Contracture Following Cleft Palate Operations. Hamilton Baxter, Royal Victoria and Children's Memorial Hospitals McGill University, and Mary Cardoso, Children's Memorial Hospital, Montreal, Que., Canada. Plast. & Reconstruct. Surg. 2:214-25, May 1947.

Mandibular Reconstruction in Jaw Deformities. Bernard N. Soderberg (Lt. Col., M.C., A.U.S.), Percy Jones General Hospital, Battle Creek, Mich. and John M. Mulvey, Crile General Hospital, Cleveland, Ohio. Plast. & Reconstruct. Surg. 2:191-206, May 1947.

Micrognathia. Treatment with External Prosthesis. Hector Marino and Mario Craviotto, British Hospital, and Rawson Hospital, Buenos Aires, Argentina. Plast. & Reconstruct. Surg. 2:260-66, May 1947.

14. Plastic Surgery

COMPOSITE FREE GRAFTS OF SKIN AND CARTILAGE FROM THE EAR.

James Barrett Brown (Col., M.C., A.U.S.), Bradford Cannon (Lt. Col., M.C., A.U.S.), Carl E. Lischer (Major, M.C., A.U.S.) and A. Bowdoin Davis (Major, M.C., A.U.S.), Valley Forge General Hospital, Valley Forge, Pa.
J.A.M.A. 134:1295-96, Aug. 16, 1947.

Repair of tissue losses from the tip, border and columella of the nose by the use of composite free grafts from the ear is described. These grafts include the two skin surfaces and cartilage between. Use of a free transplant enables repairs to be completed in a single operation, avoiding the risk of changing normal features by shifting a local flap and the multiple procedures required to transplant a distant flap. It is doubtful if grafts more than 1 cm. wide can be successfully transplanted but their length is unlimited. A single graft will therefore restore the columella, tip and one ala of the nostril with practically perfect reproduction of the normal apex.

The scar can be opened and a short ala corrected by inserting a wedge shaped graft. The scar of a constricted nostril can be excised and an open nostril formed by using a composite graft. An adequate overlap of skin must be left in repairing the tip as the blood supply comes from the margins and not through the cartilage. In preparing the defect for graft, all marginal scars must be removed and all possible well vascularized surface made available for contact between the nose and graft. Application of the composite graft must not be made until all reaction from any recent trauma has subsided.

A pattern of the nasal defect aids in selecting the donor site in the ear and is important in accurately measuring the graft. Parts of the normal ear with thin skin over the cartilage are best for grafting but a damaged ear may have enough margin left for a large composite graft. The rim of the helix is the only source for a long or wide graft but smaller grafts may come from the crus and flat grafts from the antihelix or rim of the concha. The ear is repaired at the same time as the nostril by burying the open ear in a scalp flap, or direct closure by local flap or graft. The graft is accurately sutured in place with a few buried anchor stitches and fine skin approximation sutures. The nostrils are then packed and a firm resilient pressure dressing applied with an aluminum splint. Grafts may become discolored or even blistered but usually recover if carefully handled. 4 figures.

(*A very interesting method.*—ED.)

References to Current Articles

Support of the Paralyzed Face by Fascia. James Barrett Brown and Frank McDowell, Washington University School of Medicine, St. Louis, Mo. J. A. M. A. 135:18-20, Sept. 6, 1947.

Useful Procedures In Plastic Surgery. George Warren Pierce, E. H. Klabunde and V. L. Bergeron, San Francisco, Calif. Plast. & Reconstruct. Surg. 2:358-61, July 1947.

A Plastic Operative Procedure For The Repair of Large Circular or Elliptical Body Surface Defects. Boyan Hadjistamoff, Sofia, Bulgaria. Plast. & Reconstruct. Surg. 2:362-67, July 1947.

Painful Interdigital Clavus (Soft Corn). Treatment by Skin-Plastic Operation. Edward J. Haboush and Robert V. Martin, New York, N. Y. J. Bone & Joint Surg. 29:756-57, July 1947.

Some Problems of Plastic Surgery of the Skin (*Nekotorye voprosy kozhnoplasticheskoi khirurgii*). F. L. Gektin, The Sea-Coast Regional Hospital, U.S.S.R. Khirurgiya No. 6, 30-35, 1947.

The Technic of Skin Transplantation in Trophic Ulcers of Lower Extremities. Combined Skin-Flap Plastic Surgery. Preliminary Communication. (*K metodike peresadki kozhi pri troficheskikh yazvakh nizhnikh onechnosteĭ. Plastia kombinirovannym kozhnym loskutom. Predvaritel'noe soobshchenie*). N. A. Amosov, The Novosibirsk Medical Institute, U.S.S.R. Khirurgiya No. 6, 55-62, 1947.

Skin Transplantations in Reconstructive Surgery of the Foot (*Kozhnaya plastika v vosstanovitel'noĭ khirurgii stopy*). A. I. Osna, The Kishinev Medical Institute, U.S.S.R. Khirurgiya No. 3, 37-43, 1947.

The "Sieve" Method of Skin Transplantation (*O kozhnoĭ plastike "Sito"*). A. A. Alekseev, Army Hospital, U.S.S.R. Khirurgiya No. 4, 64-65, 1947.

The Use of Open Jump Flaps in Lower Extremity Repairs. Bradford Cannon (Lt. Col., M.C., A.U.S.), Boston, Mass., Carl E. Iischer, (Major, M.C., A.U.S.), St. Louis, Mo., William B. Davis (Major, M.C., A.U.S.), Baltimore, Md., Stephen Chasko (Major, M.C., A.U.S.), New York, N. Y. Andrew Moore (Major, M.C., A.U.S.), St. Louis, Mo., Joseph E. Murray, (Major, M.C., A.U.S.), Boston, Mass. and Allyn McDowell (Capt., M.C., A.U.S.), Los Angeles, Calif. Plast. & Reconstruct. Surg. 2:336-41, July 1947.

Successful Homologous Skin Grafting in a War Burn Using an Identical Twin as Donor. John Marquis Converse, New York, N. Y., and Gaston Duchet, Paris, France. Plast. & Reconstruct. Surg. 2:342-44, July 1947.

A Method for Restoration of the Cilia of the Eyelids. Willard W. Schuessler, El Paso, Tex. and George A. Filmer, Denver, Colo. Plast. & Reconstruct. Surg. 2:345-47, July 1947.

The Blood Circulation in Pedicle Flaps. Preliminary Studies on a Photo-Electric Test for Determining Its Efficiency. Beverly Douglass and Glenn A. Millikan, Nashville, Tenn. Plast. & Reconstruct. Sug. 2:348-57, July 1947.

The Combined Use of Multiple Excision, the Z-Plastic and Sliding Flaps in the Correction of Certain Congenital and Acquired Anomalies. James T. Mills and John B. Patterson, Southwestern Medical College, Dallas Tex. Plast. & Reconstruct. Surg. 2:249-59, May 1947.

Late Repair of Massive Tissue Defects by the Split Skin-Lined Flap Graft. W. B. Macomber, Albany, and L. R. Rubin, New York, N. Y. Am. J. Surg. 73:564-67, May 1947.

Plastic Surgery in Industry. Claire L. Straith and Matthew A. Pilling, Detroit Mich. Am. J. Surg. 74:328-40, September 1947.

Reconstructive Surgery of the Injured Nail. Wilson A. Swanker, New York, N. Y. Am. J. Surg. 74:341-45, September 1947.

Total Ear Reconstruction. Preliminary Report. Gustave Aufricht, New York, N. Y. Plast. & Reconstruct. Surg. 2:297-306, July 1947.

Open Jump Flap Repairs of the Lower Extremity. Bradford Cannon (Lt. Col., M.C., A.U.S.), Carl E. Lischer (Major, M.C., A.U.S.), James B. Brown (Col., M.C., A.U.S.). Surgery 22:335-40, August 1947.

The Underdeveloped Chin. Lester W. Eisenstodt, Newark Beth Israel Hospital, Newark, N. J. Am. J. Surg. 74:39-44, July 1947.

The Surgical Correction of Congenital Cleft Lip. Harold S. Vaughan, New York Post-Graduate Medical School and Hospital, New York, N. Y. S. Clin. North America 27:417-30, April 1947.

The Surgical Treatment of Large Hemangiomas of the Face in Children. William F. MacFee, Cornell University Medical College, St. Luke's Hospital, and New York Hospital, New York, N. Y. S. Clin. North America 27:431-42, April 1947.

Bovine Cartilage in Plastic Surgery. W. E. M. Wardill and John Swinney, Royal Victoria Infirmary and the General Hospital, Newcastle-upon-Tyne, England. Lancet 2:389-90, Sept. 13, 1947.

Templates as an Aid in Marking Out Z-Plastics. Harold R. Browne, Albany Hospital, Albany, N. Y. Plast. & Reconstruct. Surg. 2:278-80, May 1947.

Art In The Nasal Plastic Operation. From the Point of View of the Rhinologist. Louis M. Pearlman, New York, N. Y. Am. J. Surg. 74:150-62, August 1947.

Late Results in Surgery for Decubitus Ulcers. Donald E. Barker (Major, M.C., A.U.S.), Beaumont General Hospital, El Paso, Tex. Am. J. Surg. 74:180-82, August 1947.

Graft Fixation Beneath Tubed Pedicle Flaps. George Benton Sanders (Lt. Col., M.C., A.U.S.) and Robert Bell Lynn (Capt., M.C., A.U.S.) Vaughan General Hospital, Hines, Ill. Am. J. Surg. 73:700-702, June 1947.

Improved Grafting Technic for Burns of the Extremity. Walter B. Macomber, Albany, N. Y., and Henry S. Patton, Oakland, Calif. Am. J. Surg. 73:684-89, June 1947.

Seamless Prosthetic Hands. A Technic of Fabrication. Carl D. Clare, Felix B. Weinberg and George C. Blevins, Veterans Administration, University of Maryland School of Medicine, Baltimore, Md., and College of Physicians and Surgeons, New York, N. Y. Arch. Surg. 54:491-516, May 1947.

15. Thyroid and Parathyroid

THE HYPERFUNCTIONING SINGLE ADENOMA OF THE THYROID.

Oliver Cope, Rulon W. Rawson and Janet W. McArthur, Massachusetts General Hospital, Boston, Mass. Surg., Gynec. & Obst. 84:415-26, April 1947.

In the past ten years 10 patients have been seen at the Thyroid Clinic of the Massachusetts General Hospital in whom symptoms of hyperthyroidism were found to be due to a hyperfunctioning adenoma of the thyroid. One of these patients was a male, the others, females. All had symptoms of hyperthyroidism of varying severity and an elevated basal metabolic rate; 5 showed a positive lid lag and stare but only 1 had any suggestion of ophthalmos.

At operation, the lesion was found to be circumscribed in all these 10 patients; in 8 patients it was confined in a capsule involving only a part of a lateral lobe; in 2 patients in both of whom the disease was of long standing, the lesion involved an entire lateral lobe. In all cases, the uninvolved tissue differed from normal thyroid tissue, being softer and more pliable, paler in color, speckled with white and less vascular. The uninvolved residual tissue of the lateral lobe containing the adenoma in 8 cases and the isthmus and contralateral lobe in all cases were smaller than normal and in some cases were shrivelled. These findings indicate a definite atrophy of the uninvolved tissue. Operation in all patients consisted of total excision of the adenoma and removal of some of the atrophic uninvolved tissue; in all but 2 patients only a small portion of this uninvolved tissue was removed for biopsy. In each instance the symptoms of hyperthyroidism were relieved by this procedure.

Four control patients studied included 1 patient with a large adenoma and two small satellite adenomas with hyperthyroidism, and 3 patients with a single adenoma but no hyperthyroidism. In these patients the uninvolved tissue was not typically atrophic although in 1 of the cases of single adenoma without hyperthyroidism, the uninvolved portion of the gland was slightly smaller and softer than normal.

The adenomatous and uninvolved atrophic tissue of 2 patients with single adenomas and hyperthyroidism and of the patient with multiple adenomas and hyperthyroidism were studied for physiologic activity by determining the ability of the explanted tissue to inactivate thyroid stimulating hormone. The adenomatous tissue in all 3 cases showed complete inactivation of the thyroid stimulating hormone; the atrophic tissue from the 2 cases of single adenoma showed no inactivation of the hormone. The uninvolved tissue from the case of multiple adenomas which was grossly normal showed normal inactivation of the hormone.

The radioactive iodine absorption by the thyroid tissue was measured

in 1 of the patients with single adenoma and hyperthyroidism and in the patients with single adenoma without hyperthyroidism. The amount of absorption varied in the single adenomas without hyperthyroidism; the activity of the adenoma may be above or below that of normal tissue; in 1 of these cases the uptake by the adenoma was more than that in normal tissue; in this case the uninvolved tissue showed gross changes suggesting partial atrophy. In the case of single adenoma with hyperthyroidism the uptake of the adenoma was high but the uninvolved tissue showed no measurable radioactivity. These findings indicate that in single adenoma of the thyroid the development of hyperthyroidism depends upon the size and the activity of the adenoma; if hyperthyroidism develops due to the hyperactivity of the adenoma the activity of the uninvolved tissue is depressed. Therefore excision of this inactive tissue is not indicated in cases of single adenoma with hyperthyroidism; if this tissue is not removed return of function will be more prompt and more complete. 17 references. 2 tables. 4 figures. 6 charts.

(*This article reemphasizes the effect of the solitary hyperactive nodule on the surrounding thyroid tissue and sounds a note of caution in regard to the surgical removal of only the active nodule.*—ED.)

SURGERY OF THE THYROID GLAND.

Frank H. Lahey, Lahey Clinic, Boston, Mass. New England J. Med. 236:46-62 Jan. 9, 1947.

In 25,000 thyroidectomies for hyperthyroidism at the Lahey Clinic, the operative mortality was 0.75 per cent; these operations were done on 22,000 patients with a patient mortality for the whole series of 0.88 per cent. These cases included the Clinic's first case and the period before iodine was used in preoperative preparation. In the cases operated since July 1, 1943 when thiouracil was first used in preoperative preparation, the patient mortality has been reduced to 0.27 per cent; and in 1945 the patient mortality was 0.17 per cent. Thiouracil, thiobarbital and propylthiouracil have now been employed in the preoperative preparation of over 500 patients with hyperthyroidism. The administration of these drugs for preoperative preparation has been placed in the hands of one man at the Clinic, E. C. Bartels. It was soon found that although the thiouracil drugs relieved the toxicity, the thyroid gland was friable and vascular, making operation difficult. A plan was then worked out of combining the advantages of thiouracil and iodine, giving the latter during the final three weeks period of preparation. During 1945 when this plan was routinely employed for patients with hyperthyroidism, no multiple-stage operations were necessary, the average hospital stay was decreased, and there was only 1 death which was due to coronary disease (0.17 per cent mortality). The use of the thiouracil drugs may cause reactions, the most serious of which are neutropenia and granulocytopenia. As it has been found that neutropenia and granulocytopenia may occur seven or eight days after withdrawal of the drug, none of the thiouracil drugs

is given in the last week before operation. If neutropenia and agranulocytopenia do occur, the best treatment is to give large doses of penicillin.

Apathetic hyperthyroidism is defined by the author as a type of hyperthyroidism without activation, without eye signs without marked enlargement of the gland, with moderate tachycardia, but with marked weight loss and myasthenia. The basal metabolic rate in these cases is often only moderately elevated, and the correct diagnosis is often not made. Yet with proper preoperative preoperative preparation subtotal thyroidectomy gives excellent results in these cases.

The term thyrocardiac has been applied to patients with cardiac failure brought about by hyperthyroidism in whom compensation cannot be established until the load imposed on the heart by hyperthyroidism has been eliminated by thyroidectomy. A total of 306 patients of this type have been followed up for varying periods since operation. In 201 cases, there has been no recurrence of decompensation, no auricular fibrillation, no myxedema and no persisting hyperthyroidism. In 100 cases there has been no recurrence of decompensation, but there is myxedema or some hyperthyroidism; only 5 patients have had a recurrence of cardiac failure.

Intractable exophthalmos has been found to be associated with myxedema rather than hyperthyroidism; the myxedema may be postoperative, spontaneous or due to thyroiditis. Since the Naffziger operation has been employed at the Clinic, no eyes have been lost from intractable exophthalmos.

As both family physicians and their patients are now less apprehensive of surgical treatment of hyperthyroidism, few patients are sent to the Clinic in a state of thyroid crisis. Occasionally, however, a patient is admitted in crisis; the diarrhea associated with hyperthyroidism makes it difficult to treat these patients. Lipocaic (a product of the alpha cells of the pancreas) has been found most effective in the treatment of this diarrhea.

Since cancer of the thyroid practically always arises in a true adenoma of the thyroid gland, the author advocates the removal of all discrete adenomas of the thyroid before they have become malignant, or if there is malignant change, before the capsule of the adenoma is eroded. Cancer may also develop in lateral aberrant thyroid glands. This type of cancer is of a relatively low grade of malignancy. Lateral aberrant thyroid glands should all be removed, and if pathologic study shows papillary adenocarcinoma, radical block dissection of the neck is indicated. In 47 patients who had lateral aberrant thyroid glands removed at the Clinic papillary adenocarcinoma was found in a high percentage; 2 patients died of carcinoma, 6 had recurrence and required reoperation, but are well, and 5 are living with recurrence.

Every surgeon in the Lahey Clinic has been taught the exposure of the recurrent nerve in thyroidectomy; this not only protects the vocal cord innervation by avoiding injury to the nerve, but also exposes the complete anatomy of the thyroid gland, permitting more radical surgery because the location of the nerve and the parathyroid glands is known. In all thyroid operations at the Clinic, two parathyroid glands with a good blood supply are

preserved, avoiding the postoperative complication of tetany.

In cases of large intrathoracic goiters that cannot be removed through the upper thoracic strait, without enlarging the diameter of the strait, the author does not attempt to enlarge the strait but ligates the superior and inferior thyroid arteries and the venous connections of the thyroid to the internal jugular vein, which completely devascularizes the intrathoracic tumor. An incision is then made into the capsule; the central mass is broken down with the finger, the semiliquid contents aspirated and the capsule separated from the surrounding pleura; in this way the tumor can be delivered through the upper thoracic strait. In such cases when an intratracheal tube cannot be used for anesthesia, the intratracheal tube may be introduced into the cocainized larynx and general anesthesia induced with safety. 15 references. 6 tables. 26 figures.

(*This article is a good review of existing principles and practice in thyroid surgery today.*—ED.)

MALIGNANT GOITERS.

A. Troell, The St. Görans Hospital, Stockholm, Sweden. Acta chir. Scandinav. 94:533-49, No. 6, 1946.

Records of goiter operations at the author's hospital showed low incidence of malignant goiters (1 per cent). Reliable diagnosis was limited to distinction between benign and malignant tumors, but differentiation of the latter into sarcomas, cancers, etc., proved difficult. Clinical symptoms of malignancy were not conclusive. About 50 per cent of the goiters operated on, and later found to be malignant though clinically thought to be benign, before or during operation were shown to be malignant on histologic examination.

On the other hand, of 15 nonradical operations on histologically malignant goiters, 5 apparently brought permanent cure (no relapse in nine to twenty-eight years). In 4 cases relapse occurred after an interval of three to five years. One relapse, several months after operation, led to patient's death. In the entire group illness was of long duration.

In another group of nonradical operations the goiter anamnesis was brief and malignancy again proved histologically. Here too 5 patients had no recurrence for a long time postoperatively (up to thirty years). In 4 cases relapses occurred in less than six months, in 1 after two years, in another the healthy interval lasted three years.

Operation in all malignant cases consisted of unilateral or bilateral resection. Follow-up examination of relapses led to the conclusion that a more radical, hence more risky, operation would not have prevented the recurrence or prolonged the healthy condition. Certain regularities were noted as regards prognosis and type of operation. In adenomas suspected of malignancy total thyroidectomy was not indicated, except in special cases, since chance for cure was limited, and the risk great. Prognosis in such cases was bad if the patient was over 50, suffered from dyspnea, ex-

hibited a change of voice and high sedimentation rate. In cases of confirmed malignancy postoperative roentgen therapy should be given as a rule. It may also be of value in cases where operation is contraindicated. 2 tables. 2 figures.

EXOPHTHALMOS AND TISSUE CHANGES IN THE GUINEA PIG FOLLOWING ADMINISTRATION OF THE THYROID STIMULATING HORMONE OF THE PITUITARY GLAND.

Brown M. Dobyns, Mayo Clinic, Rochester, Minn. West. J. Surg. 54: 411-27, November 1946.

After injection of 25 Junkmann-Schoeller units of thyroid stimulating hormone (T.S.H.), a conspicuous exophthalmos resulted in guinea pigs within twenty-four hours, regardless of the presence or absence of the thyroid gland or the testes. A generalized connective tissue reaction occurred concomitantly throughout the body, and, at the same time, a marked change took place in the body fat. The fat depots were rapidly exhausted and replaced by edema and connective tissue. Polymorphonuclear leukocytes and macrophages were involved in this reaction and appeared to be phagocytizing fat. Macrophages apparently changed to fibroblasts which deposited connective tissue.

Marked evidence that profound changes occurred in fat following injection of T.S.H. was given by the appearance of great quantities of lipoid in the liver, kidneys, muscles and in some epithelium and reticulo-endothelial cells. Values for plasma lipoid were raised and the polymorphonuclear cells of the blood seemed to possess increased amounts of fat.

The results indicate that a generalized alteration in fat metabolism occurs in the body when T.S.H. is injected in amounts sufficient to produce exophthalmos, and that a connective tissue reaction simultaneously occurs. Many of the changes in orbital tissue which produce exophthalmos are expressions of generalized tissue changes. 53 references. 11 figures.

RADIOACTIVE IODINE IN THE STUDY OF THYROID PHYSIOLOGY. VII. THE USE OF RADIOACTIVE IODINE THERAPY IN GRAVES' DISEASE.

Saul Hertz and Arthur Roberts, Massachusetts General Hospital and Massachusetts Institute of Technology, Boston, Mass. West. J. Surg. 54: 474-86, December 1946.

On a basis of a series of animal and clinical experiments using radioactive isotopes of iodine as a tracer in the investigation of thyroid function and iodine metabolism, the treatment of 29 cases of Graves' disease with internal irradiation by radioactive iodine was done. By excretion studies, external counter measurements over the thyroid gland and by planned operations in 2 cases, data were obtained which permitted the construction of a formula for a procedure in treatment.

Addition of ordinary iodine therapy after the administration of Ra-I offered many advantages in the clinical care of these patients and in the economy and safety of the method. Analysis of both the failures and successes in the 29 cases showed that radioactive iodine when given in the dosage range of 5 to 25 mC to uniodinized patients with Graves' disease, having goiters of 60 to 75 Gm., was highly effective as a cure of the disease in about 80 per cent of the patients. When appreciable activity was given and subtotal thyroidectomy was employed, myxedema or hypometabolism developed in a large fraction of the cases.

The effective dosage range in typical cases of Graves' disease is from 5 mC to 25 mC as a single dose, with the choice of the dose chiefly a function of the clinical estimation of the size of the goiter. The calculated dosages in those cases in which treatment was successful are in agreement with the roentgen dosages which have been successfully used. The radioiodine treatment is more efficacious than the orthodox roentgen treatment. The treatment of special cases in the ophthalmopathic group of Graves' disease offers special problems, as do cases with large, involutional goiters.

The following are considered important qualifications in patients to be treated by radioactive iodine: (1) no previous iodine therapy, or if treated previously, iodine treatment to be stopped for at least one month to allow maximum uptake of the dose; (2) availability for close follow-up; (3) routine iodinization, starting one to three days after giving Ra-I, as soon as the uptake is found adequate; (4) treatment of cases with large goiters with involutional changes is unwise by this method, as surgery may have to be employed; in such cases early diagnosis offers major advantages. 13 references. 3 tables. 1 figure.

(*The principles stated here are beginning to be well established and are in agreement with the data of the California group.*—ED.)

THIOURACIL. PREOPERATIVE USE IN FOUR HUNDRED PATIENTS WITH SEVERE HYPERTHYROIDISM.

Eleanor C. Bartels and George O. Bell, The Lahey Clinic, Boston, Mass.
West. J. Surg. 55:39-49, January 1947.

The preoperative use of thiouracil in 400 patients with severe hyperthyroidism is summarized and discussed. Serious coexisting disease materially increased the gravity of the condition in 26 per cent of these patients. Uncomplicated cases were ambulatory. Severe hyperthyroids were kept in bed for one or two weeks and then allowed gradually increased activity. Cardiac cases were hospitalized and given digitalis and diuretics until restoration of compensation after which ambulatory treatment was continued at home. Patients were instructed concerning possible thiouracil reactions. The drug was given in 0.8 Gm. doses three times a day at seven hour intervals. This dosage was continued throughout the treatment as reducing the dose might permit increased thyroid toxicity. Nothing is gained by dose reduction as it does not reduce danger of reaction. It is essential that the hyperthy-

roidism be completely controlled before operation if the greatest advantage is to be obtained from the drug, the patient being made asymptomatic and the B. M. R. zero or below. Overtreatment with thiouracil must be avoided however as it produces myxedema. Few but definite reactions were seen. These were ascribed to allergy because definitely a result of drug sensitivity.

This series showed preoperative thiouracil therapy to be beneficial in severe hyperthyroidism, adequately treated patients being restored to normal condition before operation. The need for more than a single operation was eliminated and anesthesia was essentially normal. The postoperative course in this series was quite different from patients who received Lugol's solution, the pulse and temperature remaining near normal, oxygen rarely needed, intravenous fluids only required the first day, pulmonary complications rare and cardiac disturbances absent. A minimum of sedation was necessary and the nursing decreased. Mortality was reduced from 4.4 to 0.5 per cent. Serious complicating disease may now be treated before thyroidectomy by first controlling the hyperthyroidism with thiouracil. Per cent of recurrences is about the same as with iodine treated patients. 3 tables. 3 charts.

(*The value of the thiourea derivatives in preparation of patients with severe thyroid disease for surgery is too well known for comment.*—ED.)

MALIGNANT ADENOMA OF THE THYROID, WITH SECONDARY METASTASES TO BONE.

Ralph E. Outerbridge, Toronto General Hospital, Toronto, Ont., Canada. Ann. Surg. 125:282-91, March 1947.

A series of 5 cases of malignant thyroid adenoma with bony metastases are discussed. These patients usually first come to the hospital for treatment of the secondary bony tumor. Case 1 came for treatment of a tumor of the zygoma, case 2 for a tumor of the parietal bone, case 3 had a tumor of the radius and so on. These bony tumors seem benign but careful examination will reveal a malignant thyroid. The primary focus is usually an encapsulated adenoma which became malignant and spread by the blood stream, usually to bones. The skull, vertebrae and pelvis are most frequently involved. The bone tumor resembles an osteolytic sarcoma or giant cell tumor but grows slowly.

The malignant thyroid and metastatic bony tumor should both be excised early if possible. Cure depends upon surgery before multiple secondary tumors appear. The slow growth of the metastases is helpful as about a year elapses between appearance of the first and subsequent secondary tumors. This accentuates the importance of early recognition of the malignancy. Biopsy from the secondary tumor shows thyroid appearing tissue on microscopic examination, the acini containing colloid. This may seem benign but invasion of blood vessels can usually be found and indicates malignancy. Prompt radical surgery is indicated with complete removal of both primary and secondary tumors if possible. Deep roentgen therapy

should be used immediately if full excision of the bony tumor cannot be made. 8 references. 1 table. 5 figures.

(*The point of excision of both the primary and early solitary secondary tumor from thyroid is well taken. In this instance, the slow growth of metastases and possible stimulation of secondary by primary tumors make surgery well worth attempting.*—ED.)

SURGICAL TREATMENT FOR CARCINOMA OF THE LARYNX.

Simon Jesberg, Los Angeles, Calif. J. A. M. A. 134:121-24, May 10, 1947.

Cancer of the larynx may be treated by surgery, radiology or both, the selection being based upon certain basic principles. There must be close cooperation between the laryngologist and the radiologist unless a physician versed in both specialties is available. There are two types of cancer of the larynx following the characteristics of the parent cells: (1) a squamous cell type of low malignancy arising from the vocal cord; (2) very malignant tumors from the columnar epithelium of the rest of the larynx. The latter respond better to irradiation than to surgery while the former are not radiosensitive, have little tendency to spread and require surgery. Cancer of the epiglottis remains localized for a considerable time and is curable by external subhyoid pharyngotomy. Subglottic cancers are not usually radiosensitive and are treated by laryngectomy unless the cord is motile and the growth in the anterior part so as to be completely removable, when laryngofissure may be used. Motility of the vocal cord is most important because if it is fixed, the underlying tissues are involved and the thyroid cartilage must also be removed. The anterior part of the other cord is also removed if the growth has involved or nearly involved the anterior commissure. Laryngectomy is required for cordal cancer which has involved the larynx beyond the cord. Preliminary irradiation should be administered for extensive or high grade malignancies. 2 references.

METASTATIC HYPERNEPHROMA OF THE THYROID GLAND.

Robert R. Linton, J. Dellinger Barney, Henry D. Moorman and Jacob Lerman, Massachusetts General Hospital, Boston, Mass. Surg., Gynec. & Obst. 83:493-98, October 1946.

The thyroid gland is rarely the site of metastases from malignant tumors elsewhere in the body. A review of the literature shows only 15 cases of metastatic hypernephroma of the thyroid gland. In several of these cases the thyroid tumor was found at autopsy; in others there was clinical evidence of thyroid tumor and operation was done.

In the authors' case, the sixteenth case of metastatic hypernephroma of the thyroid gland reported, the patient was a man 55 years of age. He

was admitted to the hospital because of the presence of a swelling in the neck, fatigability and loss of weight. These symptoms had been present for about six months. The history showed that nine years previously a left nephrectomy had been done elsewhere; pathologic examination had shown the renal lesion to be a carcinoma of the hypernephroma type. The patient had been well since that time until the onset of his present symptoms. Examination showed the thyroid to be diffusely enlarged, firm but not stony hard, and moving normally when the patient swallowed. There were no symptoms of either hyperthyroidism or hypothyroidism. There was a movable nontender mass in the region of the right kidney; on the basis of the findings on retrograde pyelography, congenital polycystic kidney was considered to be the most probable diagnosis. A total thyroidectomy was performed as the tumor mass was considered to be malignant. The pathologic findings were consistent with hypernephroma. The patient made a good postoperative recovery, but following discharge he required thyroid extract for relief of symptoms of myxedema. Four and a half months after discharge from the hospital he was again admitted because of an increasing mass and pain on the right side of the abdomen. There were no signs of recurrence of the tumor in the neck. The right kidney was exposed and an inoperable tumor found; biopsy showed renal cell carcinoma (hypernephroma). Following palliative roentgen therapy, the patient has been well for six months.

This is the only case of metastatic hypernephroma of the thyroid gland in the records of the Massachusetts General Hospital. It is an unusual case in that the first signs of the thyroid metastasis developed nine years after left nephrectomy for hypernephroma; and at the same time there was evidence of involvement of the remaining right kidney. This could be considered a case of bilateral primary hypernephroma, but the authors are of the opinion that the tumor in the right kidney was probably a metastasis from the primary lesion in the left kidney. 25 references. 4 figures.

(*This article is interesting, if for no other reason than the rarity of the described condition. It is well to remember, however, the thyroid may more frequently than diagnosed, be involved in malignancy or disease, by virtue of its rich vascular bed.*—ED.)

THE SURGICAL THERAPEUTIC SIGNIFICANCE OF THE FUNCTIONAL BEHAVIOR OF THYROID NODULES.

I. Darin Puppel, Charles P. Leblond and George M. Curtis, Ohio State University, Columbus, Ohio. Ann. Surg. 125:257-81, March 1947.

Results of radioiodine, ordinary iodine fractionation and surgicopathologic studies of various forms of pathologic thyroid tissue removed from 7 patients with different types of thyroid disease are discussed. Before making these experiments, the basal metabolic rate and acetone-soluble and insoluble iodine fractions of the blood were determined. A solution of radioiodine containing 25 to 1,000 microcuries of the radioactive element and about 2 micrograms of ordinary iodine was given fifteen to

twenty-three hours before operation. Thyroidectomy was performed and microscopic, biochemical and gross studies made of the glands.

These studies showed considerable histologic variation between nodules from the 6 cases of nodular goiter. Nodules from the patients with toxic nodular and exophthalmic goiter were not true adenoma but a hyperplasia-involution type. The nodules from different types of goiters seemed functionally similar but with a decreased function as compared with surrounding thyroid tissue. The thyroxine and di-iodotyrosine making activity of the paranodular tissue was much less than the surrounding tissue and the nodules took up less radioiodine. The thyroxine-producing activity of the paranodular tissue of patients with toxic nodular and exophthalmic goiter exceeded that activity in all other nontoxic pathologic tissue examined. The hyperplastic tissue of exophthalmic goiters showed greatest avidity for iodine and greatest production of thyroxine and di-iodotyrosine. This indicates that stored thyroid hormone in the gland is probably responsible for the benefits of iodine therapy in hyperthyroidism.

These studies indicate that care should be exercised concerning amount of paranodular tissue saved at operation in order to give the patient the best thyroid function. As much paranodular tissue of nontoxic nodular goiter and of nodular goiter with hypothyroidism should be saved as possible to prevent further decrease in thyroid function. But the paranodular tissue of nodular goiters with hyperthyroidism should be adequately resected to reduce the persistence or pseudorecurrence of symptoms. 7 references. 16 figures.

References to Current Articles

Treatment of Thyrotoxicosis with Propyl Thiouracil. Andrew Wilson and John Goodwin. University of Sheffield. Lancet 1:669-71, May 17, 1947. Propyl thiouracil was found to be four times as potent as methyl thiouracil in the treatment of 16 cases of thyrotoxicosis. The response to both drugs was equally rapid, and the maintenance dose was slightly greater for propyl thiouracil. No thyroid hyperplasia was induced. Toxic effects on the skin occurred in one case. Patients with primary and secondary thyrotoxicosis responded equally well. 6 references. 2 tables.

Use of Thyroid Extract with Thiouracil in the Preparation of the Thyrotoxic Patient. Rawley M. Penick, Jr., Tulane University School of Medicine and Ochsner Clinic, New Orleans, La. Ann. Surg. 125:582-89, May 1947.

Intrathoracic Goiter. General Review with Discussion of a Case Operated through a Transthoracic Approach. Carlos A. Prietto and William M. Tuttle, Alexander Blain Hospital, Detroit, Mich. Alexander Blain Hosp. Bull. 6:68-78, August 1947.

The Occurrence of Carcinoma of the Thyroid Gland in Autopsy Material. W.P.VanderLaan, Mallory Institute of Pathology, Boston City Hospital, Boston, Mass. New England J. Med. 237:221-22, Aug. 14, 1947.

A Concept of Toxic Goiter. Willard Bartlett, St. Louis, Mo. Ann. Surg. 125:566-71, May 1947.

Diseases of the Thyroid Gland in Occupied Belgium. Paul A. Bastenie, University of Brussels and Brugmann Hospital, Brussels, Belgium. Lancet 1:789-91, June 7, 1947.

Gumma of the Thyroid. A.H.Barker, Boundary Park General Hospital and the Royal Infirmary, Oldham, England. Lancet 1:791, June 7 1947

Bilateral Pneumothorax After Partial Thyroidectomy. B. R. Billimoria, Harefield E.M.S. Hospital, England. Lancet 1:871, June 21, 1947.

Hyperparathyroidism. George H. Stobie, Belleville, Ont., Canada. Canad. M. A. J. 57:233-36, September 1947.

Carcinoma of the Thyroid Gland in Children. Julian A. Rickles, Miami, Fla. Am. J. Surg. 74:8-13, July 1947.

New Data on the Action of Bromine Salts on the Thyroid Gland. E. N. Emelyanova, First Moscow Medical Institute, Moscow, U.S.S.R., Am. Rev. Soviet Med. 4:421-23, June 1947.

Parathyroid Tumors. Frank H. Lahey, Lahey Clinic, Boston, Mass. S. Clin. North America 27:477-85, June 1947.

Cancer of the Thyroid. Hugh F. Hare, Lahey Clinic, Boston, Mass. S. Clin. North America 27:561-68, June 1947.

Blood Iodine Studies. VIII. The Blood Iodine in Nonthyroid Disease. Geo. M. Curtis and M. Been Fertman, Ohio State University, Columbus, Ohio. Arch. Surg. 54:541-54, May 1947.

16. Thoracic Surgery

References to Current Articles

The Changing Outlook in Surgery as a Result of Chemotherapy. II. Thoracic Surgery. John I. Hayward, Melbourne, Australia. Australian & New Zealand J. Surg. 16:271-76, April 1947.

Removal of Foreign Bodies in Gunshot Wounds of the Thoracic Cavity (*Kvoprosu ob udalenii inorodnykh tel posle ogenstrel'nykh raneniĭ grudnoi polosti*). E. Ya. Raĭvid, Evacuation Hospital, U.S.S.R. Khirurgiya No. 2, 51-56, 1947.

Novocaine Blocking of the Ganglion Stellatum in Penetrating Wounds of the Pleural Cavity. (*Novokainovaya blokada zvezdchatogo uzla pri raneniyakh pronikayushchikh v plevral'nuyu polost'*). A. A. Kaspar, Army Medical Service, U.S.S.R. Khirurgiya No. 2, 56-57, 1947.

Intrathoracic Gastric Cysts. Edgar W. Davis, Washington, D. C., and David Salkin, Hopemont, W. Va. J.A.M.A. 135:218-21, Sept. 27, 1947.

Methods of Establishing a Diagnosis of Malignant Disease of the Bronchus and Esophagus. Frank D. Lathrop, Lahey Clinic, Boston, Mass. S. Clin. North America 27:582-86, June 1947.

An Announcement of Opportunities for Thoracic Surgeons in Veterans Administration Hospitals. Brian Blades, Veterans' Administration Hospital, Washington, D. C. J. Thoracic Surg. 16:237-40, June 1947.

17. Chest Wall

INFECTIONS OF THE COSTAL CARTILAGES AND STERNUM.

Herbert C. Maier, New York, N. Y. Surg., Gynec. & Obst. 84:1038-44, June 1947.

Chemotherapy is often ineffective and operative treatment becomes necessary for infections of the costal cartilages and sternum. Hyaline cartilage is avascular and therefore quite susceptible to infection. It acts as a foreign body when it loses its perichondrium and is left in an infected wound. Resection of part of a cartilage or removal of part of two or more fused cartilages leave areas denuded of perichondrium. This may be safely done in clean wounds but a sinus results in infected wounds unless the denuded portions are covered with living tissue before necrosis begins. The upper seven ribs are directly connected to the sternum by costal cartilages, the perichondrium of the cartilages being continuous with the periosteum of the ribs.

Treatment of infected costal cartilages is chiefly surgical though chemotherapy is also used. Removal of the entire cartilage is necessary if suppurative chondritis develops in one of the upper five cartilages but if part of a normal cartilage is removed in the absence of chondritis, the cut end should be covered with perichondrium. This is done by resecting about 1 cm. of cartilage subperichondrially and covering the end with the perichondrial envelope. If suppurative chondritis should develop in the sixth to the tenth cartilages inclusive, subperichondrial resection of all the affected cartilage must be done and the adjacent denuded cartilaginous areas covered with a flap of perichondrium and muscle. Penicillin is also used locally. Radical removal of the entire costal arch is necessary if it is extensively involved or this treatment fails. Early treatment of infected costal cartilages will usually prevent osteomyelitis of the sternum but only the diseased area need be removed if this does develop. Removal should be done in sections if the osteomyelitis is extensive in order to minimize abnormal mobility of the chest wall. 4 references. 3 figures.

References to Current Articles

Puncture Wounds of the Chest. Hugh Montgomery, Philadelphia Pa., David Halbersleben, Boston, and Frank Benjamin Carr, Worcester, Mass. J. Thoracic Surg. 16:407-15, August 1947.

Treatment of Purulent Pleurisy with Gramicidin. M. I. Lavrentyeva, Voronezh Medical Institute. Am. Rev. Soviet Med. 4:397-99, June 1947.

Nerve-Blocking Therapy For Fractured Ribs. D. J. Richardson and E. M. Paper, New York, N. Y. J. Thoracic Surg. 16:432-37, August 1947.

Continuous Spinal Anesthesia For Thoracoplasty. A Report of 300 Operations. George J. Willauer, Richard J. Chodoff and J. L. Garcia-Oller, Philadelphia, Pa. J. Thoracic Surg. 16:438-44, August 1947.

18. Pleura

References to Current Articles

Atelectasis as a Factor in the Medical Treatment of Pleural Empyema. The Necessity of Combating Atelectasis by Remedial Breathing Exercises. Felix G. Fleischner, Beth Israel Hospital, Boston, Mass. New England J. Med. 236:566-72, Apr. 17, 1947.

Sodium Tetradecyl Sulfate, Azochloramide and Sulfanilamide Mixture in the Prevention of Empyema Following Pneumonectomy with Contamination. O. C. Brantigan and H. L. Rigdon, Baltimore, Md. J. Thoracic Surg. 16:416-21, August 1947.

Thoracoscopy and Pneumonolysis in Pulmonary Tuberculosis. Notes of Technique and Immediate Results. Walter E. Kunstler, Montreal, Que., Canada. J. Thoracic Surg. 16:353-78, August 1947.

Intrapleural Haemorrhage Following Artificial Pneumothorax Refills. A. K. Miller and L. R. J. Rinkel, Royal National Hospital, Ventnor, England. Lancet 1:906-908, June 28, 1947.

Some Practical Guiding Principles for Closed Pneumonolysis. G. A. P. Hurley, Montreal, Que., Canada. Canad. M. A. J. 56:625-27, June 1947.

A Case of Endothelial Carcinoma of the Pleura. F. L. Skinner, Vancouver, B. C., Canada. Canad. M. A. J. 56:659-61, June 1947.

Horner's Syndrome and Hyperabduction Neurovascular Syndrome Following Intrapleural Pneumonolysis. Aaron Paley, Jewish Hospital and University of Colorado School of Medicine, Denver, Colo. J. Thoracic Surg. 16:298-301, June 1947.

19. Lung

PULMONARY RESECTION FOR SOLITARY METASTATIC SARCOMAS AND CARCINOMAS.

John Alexander and Cameron Haight, University of Michigan Medical School, Ann Arbor, Mich. Surg., Gynec. & Obst. 85:129-46, August 1947.

An apparently solitary metastatic pulmonary lesion may appear months or years after resection of a distant primary carcinoma or sarcoma. Death ensues if the metastatic growth is not surgically removed. Review of the literature shows only 5 previously reported instances with adequate records showing removal of both the primary and the metastatic pulmonary lesions. A series of 19 additional case histories of this condition is presented. Of the entire group of 24 cases, 1 patient died from the operation for resection of the pulmonary metastasis and recurrences occurred in 11 cases. There

were no recurrences in the remaining 12 cases. Of the latter group 8 have been well for one to twelve years postoperatively.

Surgery for removal of an apparently solitary metastatic neoplasm is a gamble but the operation is justified because the patient will die if unoperated and there is a fair chance that the operation may be successful. A roentgenographic pulmonary shadow at any time after removal of a primary malignancy elsewhere suggests a metastatic tumor. It is frequently difficult however to determine if the tumor is really primary, malignant or benign. The removal of such a growth is indicated if no other metastasis is discoverable by thorough examination, if the original neoplasm was removed at least three years previously without any signs of recurrence, and if the patient can stand the operation and loss of all or a part of a lung.

The length of time between removal of the original malignancy and appearance of the apparently solitary lesion is an important indication as to whether or not it is the only metastasis. Generally speaking, other metastases are less likely to be present if the single metastasis appeared late than if it appeared early. It is important not to spread neoplastic emboli when removing the tumor. The pulmonary veins should therefore be ligated as soon as possible and the lung should be handled most gently. The tumor should be removed as soon as possible without waiting to ascertain if other metastases develop later because the chances of spreading the malignancy increase with growth of the tumor. 16 references. 1 table. 18 figures.

CARCINOMA OF THE LUNG.

T. Holmes Sellors, Gordon Cruickshank and B. R. Billimoria, London Chest Hospital, London, and the Harefield Hospital, Middlesex, England. Lancet 2:119-21, July 26, 1947.

A series of 122 cases of cancer of the lung treated by pneumonectomy is reviewed. A common characteristic of these tumors is a silent insidious growth so that symptoms may be misleading. It may occur in younger people and without loss of weight, cough and hemoptysis. Pulmonary carcinoma should always be suspected when any chest condition does not fit into the accepted clinical pattern.

Symptoms depend upon the relations of the neoplasm with the thoracic organs, a central pulmonary growth causing fewer symptoms. Pressure on the lungs and bronchi cause the chief symptoms. Complete bronchial obstruction causes atelectasis beyond the tumor while incomplete obstruction with infection results in suppuration and possible abscess formation. Mediastinal involvement may cause obstruction to the great veins and paralysis of the phrenic or recurrent laryngeal nerves. Cardiac involvement may produce fibrillation. Change in the character of a chronic cough in middle aged or elderly men is suspicious. Hemoptysis is an indication for immediate roentgenographic examination. Cancer is the only condition except hydatid disease which produces continued daily staining from the mouth.

Radiography is essential for early diagnosis of cancer of the lung.

Secondary changes (abscess, atelectasis) may overshadow the tumor however and cause it to be missed. Anemia and an increased sedimentation rate are present. Examination of the sputum for cancer cells is important diagnostically but should be done by an expert and not within two weeks of a bronchoscopy or other manipulation which might cause desquamation of bronchial epithelium. Bronchoscopy is routinely done before surgery.

The type of growth has considerable bearing on the operation. Squamous cell tumors are often localized and more likely to be resectable than oat-celled cancer with heavy metastases. The operation is essentially a dissection pneumonectomy with removal of the lung and glands after the elements of the hilum are secured. The number of these patients who are suitable for radical surgery is unfortunately quite low, chiefly because of delayed diagnosis. An average of about a year elapses between the first symptoms and surgery. Pneumonectomy was only possible in 8 per cent of a series of 224 patients referred for surgery. The growth was excised in 130 of 246 cases operated upon. The mortality was 15 per cent. Effective bronchial closure has been the greatest technical problem and is still unsolved though improved. Earlier diagnosis and improved technic are giving better results. 3 references. 1 table.

(*The most satisfactory specimens for cytologic study are usually considered to be bronchial washings obtained at the time of bronchoscopy.*—M. M. R.)

PRIMARY CARCINOMA OF THE LUNG, WITH INVASION OF THE RIBS. PNEUMONECTOMY AND SIMULTANEOUS BLOCK RESECTION OF THE CHEST WALL.

Frank Philip Coleman, Richmond, Va. Ann. Surg. 126:156-68, August 1947.

Seven cases of primary carcinoma of the lung are reported; 6 of these were squamous cell carcinoma and 1 an adenocarcinoma; these growths were all in an advanced stage, with involvement of the soft tissues of the chest wall in the case of adenocarcinoma and invasion of the ribs in the cases of squamous cell carcinoma. Pulmonary resection with block resection of the chest wall was done in 5 of these cases; in 4 of these total pneumonectomy and in 1 a palliative lobectomy was done. In the case in which palliative lobectomy was done, there was involvement of a vertebra and a resection that might be curative appeared impossible; this patient died eleven months after operation. Of the 4 cases in which pneumonectomy and chest wall resection were done, 1 patient died postoperatively, and 3 patients are living and well, 1 for six years, 1 for two years and 1 for five months.

Carcinoma of the lung not infrequently involves the ribs; but the regional lymph nodes are often not involved, and the majority of the carcinomas are of the squamous cell type. This suggests that such growths are suitable for radical surgery; and that such radical surgery may improve the prognosis in these cases. In the postoperative care of these patients, re-

peated catheter suction and frequent bronchoscopic removal of secretions are necessary because the "decostalization" of the hemothorax involved make coughing ineffective.

THE PRESENT STATUS OF THE SURGICAL TREATMENT OF CARCINOMA OF THE LUNG.

Francis Rienhoff, Jr., Baltimore, Md. Ann. Surg. 125:541-65, May 1947.

An analysis of 327 consecutive cases of carcinoma of the lung treated surgically is presented. Symptoms in their order of frequency are cough, hemoptysis, loss of weight and hyperpnea. Change in the character of a cough to a spasmodic, productive or constant hacking cough should cause prompt and careful examination for possible pulmonary neoplasm. Hemoptysis is a definite indication of pulmonary malignancy unless tuberculosis or bronchiectasis is proved. Cancer may occur with tuberculosis. Time must not be wasted trying to establish a diagnosis of tuberculosis as such delay will be fatal if the condition is carcinoma. Chest pain without inflammatory or other demonstrable cause is an indication of pulmonary cancer.

Chest roentgenography is the best diagnostic method. Any abnormal chest roentgenogram not characteristic of another disease suggests the possibility of cancer and should be carefully investigated. The patient must not be permitted to await developments indefinitely as that invites a fatal outcome. An infiltrating hilar shadow with cough and hemoptysis in an older person without tubercle bacilli in the sputum nearly always indicates cancer of the hilus or root of the lung. Bronchography is occasionally useful for the diagnosis of a small bronchial growth which does not cause a shadow on the roentgenogram. Aspiration biopsy is of limited usefulness, hard to interpret and may implant cancer cells along the needle tract. Primary carcinomas of the lung often grow rapidly and metastasize early.

The only efficient treatment for carcinoma of the lung is complete removal of the entire affected lung. In this series, 215 inoperable cases were given the best medicinal and radiation therapy but all died within five months showing that such treatment is only palliative. Careful preoperative preparation is necessary for pulmonary resection, sulfamerazine being given for three days orally and 30,000 units of penicillin intramuscularly every three hours without waking the patient at night. Experience has shown a preliminary pneumothorax to be most important to determine whether or not the remaining lung is adequate for normal respiration, to teach the patient to breathe with one lung and avoid pleural shock when the thoracic cavity is opened, to enable the right heart to adjust itself preoperatively and to provide better visualization of the growth. The operation of 1-stage total pneumonectomy is described in detail. Penicillin, 150,000 units, is placed in the thoracic cavity postoperatively and 50,000 units are given in the thoracic cavity every other day and intramuscularly

every three hours if there is much infection. Too rapid increase of intrapulmonary pressure to overdistend the unoperated lung will rupture the alveoli and cause a mediastinal, subcutaneous and occasionally visceral emphysema.

In this series, 66 per cent of the lesions were inoperable and 34 per cent operable. Total operative mortality was 22 per cent. Thirty-nine per cent of the operated cases have survived from one month to thirteen years. With the exception of a professional boxer, they have all returned to their normal activities. 2 references. 6 tables. 10 figures.

(*Preoperative pneumothorax is not universally employed. Differential bronchospirometry may be a better method of testing the adequacy of pulmonary function in the good lung.*—M.M.R.)

SURGICAL ASPECTS OF BRONCHOGENIC CARCINOMA.

John C. Jones, Los Angeles, Calif. J. A. M. A. 134:113-17, May 10, 1947.

Statistics show that cancer of the lung is increasing in frequency. It occurs chiefly in persons 40 to 60 years old and four to six times as prevalent in men as women. The most common symptoms in order of frequency are cough, pain, hemoptysis, loss of weight, wheezing and dyspnea. The cough at first dry and hacking later produces mucoid, then purulent sputum. Pain varies from discomfort to the severe, intractable pain caused by involvement of the brachial plexus and intercostal nerves. Hemoptysis occurs in over half the cases, varies from a slight streaking to a fatal hemorrhage and is usually directly proportional to the degree of infection and ulceration. Loss of weight is a constant symptom but not an indication of operability. Wheezing may be intermittent, become constant and then disappear. Dyspnea occurs in about one-fifth of the cases and is usually a result of the effusion which accompanies pleuritic involvement. Hoarseness resulting from involvement of the mediastinum and recurrent laryngeal nerve indicates inoperability. Findings on physical examination vary greatly with extent and location of the lesion. Careful palpation to discover cervical, supraclavicular and axillary lymph nodes is important. Carcinoma of the lung is often erroneously diagnosed as influenza, atypical or virus pneumonia or pneumonia and the proper diagnosis delayed by temporary improvement following use of chemotherapy. Failure of roentgenograms to show resolution of pulmonary lesions after chemotherapy with clinical improvement of pulmonary disturbances indicates a primary bronchogenic neoplasm until disproved. Sputum should be examined for tubercle bacilli.

While bronchogenic cancer has no characteristic roentgen features, roentgenography usually suggests the diagnosis though careful fluoroscopy with lateral and oblique roentgenograms may be necessary. Bronchograms are rarely required and may induce an acute pneumonitis. Tomograms are helpful when the growth is beyond bronchoscopic vision. Bronchoscopy is next in importance to roentgenography as a diagnostic aid, enables a biopsy

specimen to be obtained and may determine operability. Needle biopsy is condemned because it may produce hemorrhage, infection and extension of the tumor along the needle tract.

Total pneumonectomy with resection of the regional lymph nodes is the only cure for this condition. Roentgen therapy is only palliative for inoperable cases. The operation is described. Bronchoscopic aspiration is sometimes necessary preoperatively to remove secretions from a blocked bronchus. Preliminary pneumothorax is not believed worth while and is not used. Postoperative aspiration of all pulmonary secretions with a catheter is done through the endotracheal tube until the entire lung is "dry" upon auscultation.

Analysis of 196 cases of bronchogenic cancer showed a total of 74 per cent to be inoperable. Of the cases having pneumonectomy, 5 per cent died in hospital and 29.5 per cent of the operative recoveries have since died. These results emphasize the urgent necessity for early diagnosis and pneumonectomy in these cases. 2 references.

PRIMARY PULMONARY MALIGNANCY TREATED BY RESECTION.

Alton Ochsner, Michael E. DeBakey and Leonard Dixon, School of Medicine, Tulane University of Lousiana and Ochsner Clinic, New Orleans, La. Ann. Surg. 125:522-46, May 1947.

Analysis is made of 129 resected cases of primary pulmonary malignancy with special emphasis upon diagnosis and survival rates. Delay in diagnosis of carcinoma of the lung is the result of its slow onset and lack of characteristic symptoms. The symptoms in their usual order of frequency are cough, weight loss, pain or discomfort in the chest, hemoptysis, dyspnea, wheezing and voice changes. Only one or two of these are present in early cases. Physical signs are not characteristic, vary with the size and location of the tumor and are frequently absent in early cases. Roentgenography is the most valuable diagnostic aid and gives a positive diagnosis in 60 to 80 per cent of cases. Bronchography is especially valuable in cases having tumors too small or insufficiently dense to cause a shadow on a plain roentgenogram or tumors located in a small bronchus inaccessible to the bronchoscope. The most reliable diagnostic method is bronchoscopy with biopsy which is accurate in 60 to 80 per cent of cases depending upon location of the tumor. Microscopic examination of sputum or material aspirated at bronchoscopy is becoming increasingly important but requires considerable experience. Needle aspiration biopsy is condemned because of the danger of causing spread to the pleura and chest wall.

The only adequate treatment is complete and extensive resection of the tumor, pneumonectomy being the procedure of choice. The anterior approach is preferred when not contraindicated, the posterolateral being used when dense lateral and posterior adhesions are anticipated. Ligation of the large hilar vessels in the pericardial cavity, resection and suture of part of the auricle, resection of part of the diaphragm, or resection of part

of the chest wall was done in 39 cases where the tumor had extended beyond the lung. Postoperative empyema developed in 11.6 per cent of cases, its incidence apparently not being affected by either the sulfonamides or penicillin. The survival rate depends upon the operability and type of tumor, being naturally best with patients having localized lesions. Thirty-two patients of this series died in the hospital, 15 from cardiovascular complications.

This analysis has shown the tremendous importance of early diagnosis which permits complete removal of the growth with the least operative risk. Routine roentgenologic chest examinations are advised in all patients over 40 years of age with pulmonary symptoms. In 4 patients in this series the tumor was accidentally discovered by routine roentgenogram. 21 references. 1 table. 27 charts.

References to Current Articles

Lung Mobilization. Its Indications in the Management of "Captive" Lung. Hiram T. Langston, Northwestern University Medical School, Chicago, Ill. Surg., Gynec. & Obst. 85:301-307, September 1947. Discusses methods of diagnosis of captive lung, i.e., a lung retained mechanically in a state of collapse; and treatment of this condition by thoracotomy and decortication. Reports 2 illustrative cases. 13 references. 7 figures.

Need for Early Diagnosis of Bronchogenic Carcinoma. Report of Sixty-Five Cases. Ralph Berg, Jr., J. K. Poppe and T. L. Havlicek, Portland, Ore. Northwest Med. 46:452-55, June 1947.

Carcinoma of the Lung. A Six Year Study. George Hoppin Humphreys II., Presbyterian Hospital and College of Physicians and Surgeons, Columbia University, New York, N. Y. Bull. New York Acad. Med. 23:330-37, June 1947.

Streptomycin Treatment of Pulmonary Infections. H. William Harris, Roderick Murray, Tom F. Paine and Maxwell Finland, Boston City Hospital and Harvard Medical School, Boston, Mass. New England J. Med. 236:611-22, Apr. 24, 1947.

Nebulization Therapy in Bronchiectasis. The Use of Penicillin and Streptomycin Aerosols. Arthur M. Olsen, Mayo Clinic, Rochester, Minn. J. A. M. A. 134:947-53, July 12, 1947.

Appraisal of Surgery in the Treatment of Bronchiectasis. Ralph Adams and Bernard J. Ficarra, Lahey Clinic, Boston, Mass. J. A. M. A. 134: 240-45, May 17, 1947.

Clinical Diagnosis and Surgical Treatment of Lung Echinococcus (*Klinicheskaya diagnostika i khirurgicheskoe lechenie ekhinokoka legkogo*). I. M. Popov'yan, The First Lenin Medical Institute of Moscow, U.S.S.R. Khirurgiya No. 5, 55-64, 1947. 5 figures.

Pulmonary Cysts. Special Reference to Surgical Treatment of Emphysematous Blebs and Bullae. Emil Naclerio, New York, N. Y. and Lazaro Langer, Córdoba, Argentina. Surgery 22:516-24, September 1947.

The Use of a Prosthesis to Prevent Overdistention of the Remaining Lung Following Pneumonectomy. A Preliminary Report. Julian Johnson, Charles K. Kirby, C. S. Lazatin and J. A. Cocke, Philadelphia, Pa. Surgery 22:179-90, August 1947.

Pulmonary Tuberculosis Associated with Anomalous Common Left Pulmonary Vein Entering the Left Innominate Vein. James S. Conant and Leonard T. Kurland, Glenn Dale, Md. J. Thoracic Surg. 16:422-26, August 1947.

An Unusual Hamartoma (So-Called Chondroma of the Lung). Morris A. Simon and Harry C. Ballon, Montreal, Que., Canada. J. Thoracic Surg. 16:379-91, August 1947.

Adenoma Arising from Small Bronchi Not Visible Bronchoscopically. Herbert C. Maier and Walter W. Fischer, New York, N. Y. J. Thoracic Surg. 16:392-98, August 1947.

Lung Resection for Pulmonary Tuberculosis. Charles Philamore Bailey, Philadelphia, Pa. J. Thoracic Surg. 16:328-41, August 1947.

Intrabronchial Hemorrhage in Battle Casualties. Mark H. Williams, Binghamton, N. Y. J. Thoracic Surg. 16:342-52, August 1947.

Induction of Bronchogenic Carcinomas in Mice. E. S. Horning, Royal Cancer Hospital, London, England. Lancet 2:207-209, Aug. 9, 1947.

Diagnosis and Treatment of Lung Tumors. Ralph Adams, Lahey Clinic, Boston, Mass. S. Clin. North America 27:592-95, June 1947.

Pulmonary Arteriovenous Aneurysm With Secondary Polycythemia. Report of the First Case Treated by Lobectomy. W. H. Beierwaltes and F. X. Byron, Ann Arbor, Mich. J. A. M. A. 134:1069-72, July 26, 1947.

An Endobronchial Balloon for the Control of Bronchial Secretions During Lobectomy and Pneumonectomy. James D. Moody, Josiah C. Trent and George W. Newton, Duke Hospital, Durham, N. C. J. Thoracic Surg. 16:258-64, June 1947.

Amyloid Disease of the Lung Treated by Pneumonectomy. Report of a Case. Rodger E. Weismann, O. Theron Clagett and John R. McDonald, and George W. Mewton, Duke University School of Medicine and Mayo Foundation and Mayo Clinic, Rochester, Minn. J. Thoracic Surg. 16:269-81, June 1947.

Case of Massive Conglomerate Tuberculosilicosis Simulating Pulmonary Neoplasm. Warriner Woodruff and Winfield O. Kelley, Saranac Lake Hospital, Saranac Lake, N. Y. J. Thoracic Surg. 16:282-90, June 1947.

Bilateral Lobectomy for Bilateral Bronchiectasis. J. Dewey Bisgard and S. A. Swenson Jr., Omaha, Neb. Arch. Surg. 54:483-90, May 1947.

20. Mediastinum

MEDIASTINAL CYSTS AND TUMORS.

Martin L. Bradford (*Major, M.C., A.U.S.*), *Hugh W. Mahon* (*Col., M.C., A.U.S.*) *and John B. Grow* (*Col., M.C., A.U.S.*). Surg., Gynec. & Obst. 85:467-91, October 1947.

Mediastinal cysts and tumors are classified as congenital cysts, acquired cysts (including parasitic cysts), connective tissue tumors, neurogenic tumors, primary tumors of the thymus (benign and malignant), primary tumors of the lymph nodes, sarcoma (primary and secondary), carcinoma (primary and secondary), intrathoracic goiter.

Many of these tumors are asymptomatic; where symptoms are present, they are varied and in no way pathognomonic of the condition. The findings on physical examination are also varied, according to the size, site and consistency of the growth and the presence or absence of complicating infection. Roentgenograms are a valuable aid in diagnosis, but in most instances thoracotomy is necessary for definitive diagnosis.

Eighteen cases of congenital mediastinal cysts are reported: 1 dermoid cyst, 3 teratomas, 8 pericardial celomic cysts, 5 bronchial cysts and 1 esophageal cyst. These cysts were successfully removed; one of the teratomas showed evidence of malignancy and the patient developed lung metastases and died three months after operation. All the other patients recovered.

There were 3 mediastinal lipomas, successfully removed. In 1 case of multiple leiomyomas of the esophagus not involving the mucosa, the tumors (14) were removed without entering the lumen of the esophagus. There were 3 of neurofibromas and 1 schwannoma, all originating in the mediastinum, and all successfully removed; none showed evidence of malignancy. There were also 2 ganglioneuromas, both benign, and both successfully removed. There was one instance of thymus hyperplasia with symptoms of myasthenia gravis; thymectomy resulted in marked improvement in the patient's general condition. In 1 case in which a routine roentgen examination showed a tumor in the right side of the mediastinum, a frozen section made at the time of operation showed it to be malignant; as the tumor was invading the vena cava and the innominate veins, operative removal was not attempted and postoperative roentgen ray treatment was given. The tumor mass disappeared, and the patient has been free from symptoms and his roentgenograms negative for a year since the completion of treatment. One case of thymic cyst in an adult is reported; the cyst completely replaced the gland; it was successfully removed, and is apparently the first cyst of this type and size in an adult patient to be surgically removed.

Fifteen cases of Hodgkin's disease have been treated by the authors in the past two years, and mediastinal biopsy was necessary in only 2 cases; 1 of these cases is reported. There were 4 cases of Boeck's sarcoid involving the mediastinal lymph nodes in this series; in these cases the diagnosis was proved by biopsy; in 2 cases thoracotomy was done for biopsy of a medias-

tinal node; in the other 2 cases the biopsy specimen was from a peripheral node. These 4 cases were seen within a six weeks' period. In 3 cases of carcinoma of the mediastinum in which diagnosis was made by exploratory thoracotomy and biopsy, all the patients have died in spite of roentgen ray therapy; autopsy showed the growths to be primary in the mediastinum. One case of mediastinal goiter is reported in which there was no connection of the tumor with the thyroid; it proved to be a benign aberrant thyroid, lying completely within the anterior mediastinum; the patient made a good recovery.

These cases show the importance of thoracotomy for pathologic diagnosis of mediastinal growths. In this series, thoracotomy proved to be an entirely safe procedure, with no deaths. 65 references. 75 figures.

References to Current Articles

Anomaly of Aorta Simulating Mediastinal Tumor. David B. Corcoran and Frank Philip Coleman, Richmond, Va. J. Thoracic Surg. 16:427-31, August 1947.

Tumors of the Thymus. Robert S. Long and Frank N. Allan, Lahey Clinic, Boston, Mass. S. Clin. North America 27:569-76, June 1947.

Benign Mediastinal Tumors. A Report of Six Cases with Analysis of Diagnostic Criteria and Advocation of Surgical Removal. Esther S. Silveus and Ralph Adams, Lahey Clinic, Boston, Mass. S. Clin. North America 27:596-604, June 1947.

Mediastinal Tumor. Jacob K. Berman, J. Paxton Powell and Philip C. Hennessee, Indianapolis, Ind. Am. J. Surg. 74:205-10, August 1947.

21. Heart

CONTROL OF HEMORRHAGE FROM THE CARDIAC AURICLES BY THE GELATIN SPONGE. AN EXPERIMENTAL STUDY.

Robert Warren Jampolis, Hilder Perry Jenkins, Melvin Micklin Newman and George Lionel Nardi, University of Chicago, Chicago, Ill. Surgery 22:198-208, August 1947.

Experiments were performed on 18 dogs under ether anesthesia to determine the efficacy of gelatin sponge in controlling hemorrhage from the cardiac auricles. Massive hemorrhage was produced by thrusting a scalpel into the wall of the auricle at the base of the appendage or removing about 1 cm. of the tip of the auricular appendage.

Dry compressed gelatin sponge was cut the same size as the wound, placed over the bleeding surface and held there for about ten minutes by firm pressure. This usually stopped the hemorrhage but it was sometimes necessary to apply a second or third sponge. Placing perforated Cilkloid between the sponge and glove prevented the sponge adhering to the glove. It also worked successfully when the Cilkloid was made to adhere to the sponge preoperatively by applying a 2 per cent solution of gelatin. This

facilitated handling the two substances. All the dogs survived the operation and died or were sacrificed three hours to seventy-seven days afterwards. There was no secondary hemorrhage. Examination at autopsy showed the gelatin sponge adhering firmly to the wound without hemorrhage, infection or aneurysm formation.

Certain details of technic in applying the gelatin sponge which may mean success or failure, especially in controlling a large hemorrhage, are described. The sponge should be compressed between the fingers until about one-sixteenth of an inch thick before being applied to the bleeding surface. It must be held firmly against the surface for several minutes, and not just placed against the bleeding point. It is extremely important to prevent the sponge sticking to the gloved finger as it otherwise pulls away from the wound when the finger is removed. This was done by using perforated Cilkloid between the glove and sponge. A fresh sponge should be substituted if the blood clots in the sponge before it adheres to the wound.

The gelatin is not a substitute for suture or ligature but is valuable in stopping bleeding from severe cardiac wounds when properly used. It may be employed to reinforce a suture line or temporarily to enable suture to be placed in a dry field. It controls hemorrhage where suturing is undesirable or difficult. This method may be useful clinically in controlling bleeding from wounds of the auricles and in operations on cardiac valves. 25 references. 1 table. 7 figures.

INFECTIVE ENDARTERITIS OF THE PULMONARY ARTERY.

A. Rae Gilchrist and Walter Mercer, The Royal Infirmary, Edinburgh, Scotland. Lancet 2:267-72, Aug. 23, 1947.

This condition is the most serious and yet the commonest complication of persistent patency of the ductus arteriosus, occurring in 6 of a series of 60 consecutive cases. A patent ductus may at any time cause a pulmonary endarteritis, the roughened surface forming a suitable location for starting a local infection. Though so comparatively common, this condition is not generally well known clinically.

The disease is characterized by local evidence of a patent ductus arteriosus associated with symptoms of persistent septicemia and recurrent pulmonary infarcts. Symptoms of a patent ductus are distinctive, continuous murmur well localized in a small area below the inner end of the left clavicle with an absence of the more obvious signs of congenital heart disease. The septicemia has the usual symptoms. The respiratory symptoms may hide the underlying condition. An early diagnosis is necessary for successful treatment. Blood cultures should be made in cases of patent ductus with unexplained fevers. Illustrative cases are discussed.

Treatment consists of prompt closure of the ductus as soon as the diagnosis of infection is definite. This will sterilize the peripheral blood more effectively than chemotherapy, probably because the Streptococcus cannot live in the low oxygen tension of venous blood. Penicillin in doses of

500,000 units daily for twenty-eight days may be given patients too ill for surgery in endeavor to overcome the infection so that they can be safely operated. The operation is described. The anterior pleural approach through the second left intercostal space is preferred to the posterolateral incision because it causes less shock. A flap method is used. The pulmonary artery may require reflection for adequate exposure. A large thymus gland was dissected downward in 2 cases and gave no postoperative trouble. The use of special cystic-duct forceps for ligating the ductus is described. They have a blunt nose, no teeth, and various curves to enable burrowing about the ductus. They are more helpful and much safer than other methods. The entire length of the ductus was not removed in any case as this increases operative risks and is unnecessary.

Infective endarteritis may be prevented by routine use of the sulfonamides in operations on the mouth and throat. Dentists should do the same for patients with valvular or congenital heart disease. Children known to have a patent ductus should be kept under observation until 7 to 10 years old when prophylactic surgical ligation should be done. Mortality should be less than 3 per cent. 26 references. 1 table. 5 figures.

COMPLICATIONS OF THE SURGERY OF PATENT DUCTUS ARTERIOSUS.

John C. Jones, Los Angeles, Calif. J. Thoracic Surg. 16:305-13, August 1947.

Complications encountered in the surgery of a series of 61 cases of patent ductus arteriosus are discussed. A modified Gross technic was used in 8 and ligations in continuity on 53 patients. There were 2 deaths in the series, 1 from exsanguination and arrest of the heart and the other from an endocarditis. Postoperative pleural effusion occurred in practically all cases but aspiration was only required for 22 patients. Neither penicillin nor the sulfonamides were used at any time unless some complication specifically required them. Postoperative pulmonary atelectasis occurred in 5 patients, paralysis of the left recurrent laryngeal nerve in 3 and empyema in 2 cases. No wound infections developed. The frequent occurrence of keloid in the supramammary scars caused this approach to be changed to an inframammary incision when the anterior approach is used because excessive tension on the pectoralis muscle is the chief cause of this keloid formation and not weight of the breast. A posterolateral approach with resection of the fourth and fifth ribs is now preferred because it is considered to give a better exposure. A considerable decrease in the incidence of keloid followed its use.

Case histories of 2 patients are presented in whom the ductus was ligated and who developed sudden and severe hemoptyses postoperatively. It is believed that both these cases developed an aortobronchial fistula. There was no evidence of development of a fistula between the pulmonary artery and the aorta or of recurrence of the continuous murmur. The ductus had evidently been obliterated. It was ligated with two silk umbilical tapes but the mediastinal pleura was not closed over the site of ligation in either

patient. The hemoptyses in the first patient were so large that it is doubtful that the silk knots could have eroded only the lung with only pulmonary hemorrhage. The knots are now buried by closing the mediastinal pleura. This however would not prevent development of a possible aneurysm or erosion of the aorta. This complication indicates the advisability of dividing the ductus arteriosus. A continuous murmur persists in 9 cases of this series but all 58 patients are alive and well. The other case is a diabetic in whom the fistula became reestablished. 2 references. 7 figures.

DEVELOPMENT OF AN ANASTOMOSIS BETWEEN THE CORONARY VESSELS AND A TRANSPLANTED INTERNAL MAMMARY ARTERY.

Arthur M. Vineberg and Beverly L. Jewett, Royal Victoria Hospital and McGill University, Montreal, Que., Canada. Canad. M. A. J. 56:509-14, June 1947.

An attempt was made to supply a fresh source of arterial blood to the heart muscles by partially removing the left internal mammary artery from its normal position and implanting it into the myocardium of the left ventricle. A successful technic was to tie the internal mammary artery at its distal end between two ligatures and cut it. The free end was drawn through a previously prepared tunnel in the wall of the left ventricle and fixed. Ten dogs were so treated and were killed after three or four months; in addition there were 17 animals treated in the same manner which are still alive after one year. Two of the 10 dogs killed showed a definite communication between the left internal mammary artery and the left coronary circulation. One of the dogs was killed ninety-nine days after operation and sections were taken through the site of implantation of the left internal mammary artery into the wall of the left ventricle. They showed three openings in the wall of the implanted mammary artery; these appeared to be vessels and were traced from the mammary artery into the myocardium. The second dog was killed after eighty-nine days. Injection fluid inserted into the left internal mammary artery distal to the point at which the artery had been previously freed flowed down the mammary artery; the left coronary vessels and pulmonary vein filled immediately and intercostal vessels on the left side were injected. In the isolated preparation it was observed that only the left coronary vessels were injected and sections through the site of implantation showed a well-injected internal mammary artery.

In eight of 10 animals the internal mammary artery became partially adherent to the chest wall in its former bed. Distal to this the artery was free for a short distance before entering the heart. The artery was patent throughout in 5 animals and was patent in 2 animals to the site of and beyond a constricting scar which developed at the junction between the free arterial part and that part of the artery which readhered to the chest wall. In 3 dogs it was patent to the site of the scar but thrombosed beyond it.

In 9 of 10 dogs the mammary artery after transplantation revascu-

larized the neighboring structures. In 2 cases there was an anastomosis with the left coronary vessel. In 5 animals in whom a constricting scar formed, the artery proximal to this region formed communications with the chest wall and intercostal vessels on the left side. In 1 animal, where the artery was pulled out of the heart, a communication formed between it and the vessels of the chest wall and the pericardium. 4 references. 2 tables. 4 figures.

References to Current Articles

The Operation for Congenital Coarctation of the Aorta. H. T. van Diggelen, Cape Town, South Africa. Lancet 2:64-65, July 12, 1947.

The Experimental Basis for Introduction of Medicinal Substances into the Left Ventricle of the Heart (*Eksperimental'noe obosnovanie vvedeniya lekarstvennykh veshchestv v levyĭ zheludochek serdtsa*). V. V. Kovanov, The First Lenin Medical Institute of Moscow, U.S.S.R. Khirurgiya No. 5, 17-21, 1947.

The Experimental Basis of Heart Transplantation in Warmblooded Animals (*Eksperimental'noe obosnovanie peresadki serdtsa u teplokrovnykh*). B. V. Ognev, Academy of Medical Science, U.S.S.R. Khirurgiya No. 2, 35-36, 1947.

Complete Division for the Patent Ductus Arteriosus. Robert E. Gross, Boston, Mass. J. Thoracic Surg. 16:314-27, August 1947.

The Syndrome of Cerebral Abscess and Congenital Cardiac Disease. Edward M. Gates, H. Milton Rogers and Jesse E. Edwards, Mayo Foundation, Rochester, Minn. Proc. Staff Meet., Mayo Clin. 22:401-12, Sept. 17, 1947.

Systemic Right Ventricle in Patent Ductus Arteriosus. Report of A Case with Obstructive Pulmonary Vascular Lesions. John M. Douglas, Howard B. Burchell, Jesse E. Edwards, Thomas J. Dry and Robert L. Parker, Mayo Foundation, Rochester, Minn. Proc. Staff Meet., Mayo Clin. 22:413-23, Sept. 17, 1947.

Surgical Treatment of Pericarditis Contrictiva. Kaare Liavaag, Rikshospitalet, Sweden. Acta chir. Scandinav. 95:440-54, Fasc. 5, 1947.

Permanent Intubation of the Thoracic Aorta. Charles A. Hufnagel, Harvard Medical School, Boston, Mass. Arch. Surg. 54:382-89, April 1947.

Tuberculous Pericarditis. Harry Kopelman, St. George's Hospital, London, England. Brit. M. J. 4503:559-62, Apr. 26, 1947.

Diagnosis of Tetralogy of Fallot and Indications for Operation. Helen B. Taussig, Johns Hopkins Hospital, Baltimore, Md. J. Thoracic Surg. 16:241-43, June 1947.

The Technique of Creation of an Artificial Ductus Arteriosus in the Treatment of Pulmonic Stenosis. Alfred Blalock, Johns Hopkins University and Hospital, Baltimore, Md. J. Thoracic Surg. 16:244-55, June 1947.

Discussion of Motion Picture Presentation on "The Surgical Treatment of Coarctation of the Aorta". Clarence Crafoord, Stockholm, Sweden. J. Thoracic Surg. 16:256-57, June 1947.

22. Esophagus

END-TO-END ANASTOMOSIS OF THE ESOPHAGUS FOR ESOPHAGEAL ATRESIA.

Orvar Swenson, Children's Hospital and Harvard Medical School, Boston, Mass. Surgery 22:324-34, August 1947.

Results of operations upon a series of 20 infants with atresia of the esophagus are reported. Earlier diagnosis and changes in technic, preoperative and postoperative care in this series lowered the mortality rate to 6.6 per cent for primary esophageal anastomosis.

A small No. 8 soft rubber nasal catheter with three holes in the end is passed into the upper esophageal pouch preoperatively and saliva removed from the blind pouch by continuous gentle suction. This decreases the danger of aspirating saliva. Sulfadiazine and penicillin are administered; parenteral fluids are given to control dehydration and the patient placed on oxygen. A small blood transfusion is given if the red blood count is below 4.5 million four to twelve hours after parenteral fluids are started. Plasma is given if the blood count is above 4.5 million. Operation is not delayed more than forty-eight hours as the patient's condition is not improved by further delay and there is increased possibility of aspiration pneumonia. Cyclopropane with preoperative atropine is the preferred anesthetic, morphine not being used because of the severe respiratory depression caused in cyclopropane anesthesia in infants.

The operation is described. Adequate blood replacement during the operation is important. A cannula is therefore placed in a vein of the ankle and blood transfused during the operation. A retropleural approach was used in all cases. An advantage of this route is that postoperative anastomosis leaks from a fistula which drains through the wound and is not necessarily fatal. These fistulas closed in 3 cases with good recoveries. The difficulty in an end to end anastomosis is overcoming the distance between the upper and lower segments. The fistula is divided close to the trachea and the tracheal opening sutured as this is done. This provides a maximum length for the lower esophagus and eliminates a large tracheal opening while the fistula is being cut. Not over 2 cm. of the lower esophagus should be freed as the blood supply is poor. Tension on the suture line must be minimized. The lower esophageal segment is friable and cannot be depended upon to stand tension. The upper pouch is hypertrophied, strong, has an excellent blood supply and can be freed high in the neck, considerable length being gained. The muscular coat and submucosa can stand considerable tension. Traction sutures through these and the fibrous perivertebral fascia pull the upper pouch down into the chest and diminishes tension on the suture line. Motion at the suture line is also prevented. The end to end anastomosis is made with a row of 00000 silk sutures through the muscular coats and another approximating the mucosa without turning in a diaphragm. The ends are not telescoped as in the Haight method. The nasal catheter is removed as soon as the operation is completed to minimize pulmonary in-

fection and possible tracheal obstruction by exudate along the tube. A small rubber drain is inserted down to the anastomosis and removed after four days.

The postoperative care is chiefly to give the infant sufficient fluids, protein and caloric intake and prevent a general edema. The suture line may be endangered by the swelling. A Stamm gastrostomy is done the day after operation and no oral feedings given until after the anastomosis has healed. Fluids are started at two hour intervals via the gastrostomy eight hours postoperatively and a dilute formula commenced in eighteen hours. Full diet is given in forty-eight to seventy-two hours. Daily blood and plasma infusions are given the first two or three days. Adequate fluid and proteins cannot be given parenterally alone the first few days when most needed. Oral feedings are commenced the tenth day postoperatively with a half ounce of sterile water every two hours. Part of the formula is then given orally and gradually increased until all formulas are given by mouth in two or three days. 4 references. 7 figures.

TREATMENT OF ESOPHAGEAL VARICES BY INJECTION OF SCLEROSIS-FORMING AGENTS THROUGH THE ESOPHAGOSCOPE. PERFORMED IN SPLENECTOMIZED PATIENT SUFFERING FROM SPLENIC PHLEBOSTENOSIS (SPLENIC ANEMIA). A CASE WITH AUTOPSY.

E. Trolle and D. Trolle, Frederiksborg, Norway. Acta chir. Scandinav. 94:385, No. 5, 1946.

A man, 24, had recurring gastro-enteric hemorrhages. The size of the spleen was variable; anemia, leukopenia and thrombopenia were present. Condition was diagnosed as splenic phlebostenosis. The spleen was excised. Microscopically, fibrosplenia, with slight stasis was evident. The liver was normal with no ascites. Seven months later, after another hemorrhage, sclerosing injections into the esophageal varices were attempted, with a view to shrinking the latter. Esophagoscopy was done, a special apparatus constructed, and a total of 32 injections given (Varex, single dose 1 to 8 cc.; duration of treatment thirty months). During nineteen months after the first treatment there were no hemorrhages, then one occurred, and for another twelve months not a single attack was recorded. By the thirtieth month the patient died from an irrelevant cause. Autopsy and microscopic examination showed enlarged varices but no thrombosis, sclerosis or recanalization. Hence, Varex, though an efficient sclerosing agent, seems to have had no effect. 22 references.

References to Current Articles

The Early Diagnosis of Cancer of the Esophagus and Stomach. Heneage Ogilivie, Guy's Hospital, London, England. Brit. M. J. 4523:405-407, Sept. 13, 1947. Early diagnosis of cancer of the esophagus and stomach depends chiefly upon careful clinical study of any suspicious symptoms; unexplained continuous loss of weight is especially suggestive of cancer. Exploratory operation is indicated if cancer cannot be definitely diagnosed or ruled out by other means.

Carcinoma of the Esophagus. Franz Buschke and Simeon T. Contril, Seattle, Wash. J. A. M. A. 134:127-30, May 10, 1947.

Congenital Atresia of the Oesophagus. Two Cases Successfully Treated by Anastomosis. R. H. Franklin, British Postgraduate Medical School, London, England. Lancet 2:243-44, Aug. 16, 1947. 9 references. 2 figures.

Radical and Palliative Transpleural Operations in Cancers of the Esophagus (*Chrezplevral'nye radikal'nye i palliativnye operatsii po povodu raka pishchevoda*). V. I. Kazanskiĭ and O. E. Kovalevskiĭ, The Lenin Central Institute of Hematology and Blood Transfusion, Academy of Medical Science and the Central Clinical Hospital M.P.S., U.S.S.R. Khirurgiya No. 2, 37-45, 1947.

Isolation of the Esophagus in Cancers of Its Thoracic Segments (*O vyklyuchenii pishchevoda pri rake ego grudnogo otdela*). K. P. Sapozhkov, Irkustsk, U.S.S.R. Khirurgiya No. 4, 27-34, 1947.

Congenital Oesophageal Atresia (Some Anatomical and Embryological Aspects). R. L. deC. H. Saunders, Halifax, N. S. and H. S. Wright, Fredericton, N. B., Canada. Canad. M. A. J. 57:237-40, September 1947.

The Radiographic Diagnosis of Perforations of the Upper Gastrointestinal Tract Into the Mediastinum and Pleural Cavity. Gordon J. Culver and Stanley B. Clark, Buffalo General Hospital, Buffalo, N. Y. Surgery 22:458-65, September 1947.

The Use of the Jejunum in the Construction of an Antethoracic Esophagus. John Van Prohaska and John Sloan, Chicago, Ill. Surgery 22:191-97, August 1947.

Laryngo-Esophagectomy. Ralph R. Braund, Tumor Clinic of the National Cancer Institute, U. S. Public Health Service, Baltimore, Md. Ann. Surg. 126:215-19, August 1947.

Primary Tumors of the Esophagus. Herbert D. Adams, Lahey Clinic, Boston, Mass. S. Clin. North America 27:587-91, June 1947.

Early Diagnosis in Radical Resection of Carcinoma of the Lower Esophagus. I. Darin Puppel, Ohio State University, Columbus, Ohio. Am. J. Surg. 73:695-99, June 1947.

Surgical Lesions of the Esophagus Seen in an Army Thoracic Surgery Center. Earle B. Kay, Cleveland, Ohio. J. Thoracic Surg. 16:207-14, June 1947.

Technical Problems in the Surgical Treatment of Carcinoma of the Esophagus and Upper Stomach. John H. Garlock, Mt. Sinai Hospital, New York, N. Y. J. Thoracic Surg. 16:215-25, June 1947.

Spontaneous Rupture of the Esophagus. Report of a Case with Recovery. Norman William Frink, Northern Permanente Foundation, Vancouver, Wash. J. Thoracic Surg. 16:291-97, June 1947.

New Concepts of the Etiology and Treatment of Diverticula of the Esophagus. Brien T. King, Seattle, Wash. Surg., Gynec. & Obst. 85:93-97, July 1947.

23. Breast

SURGICAL MANAGEMENT OF LARGE DEFECTS OF THE THORACIC WALL.

Herbert C. Maier, New York, N. Y. Surgery 22:169-78, August 1947.

Restoration of large defects and improving the stability of the chest wall after such defects are discussed. The principles involved are similar to those in other parts of the body, if the loss of tissue here does not extend beyond the extra thoracic muscles. Excision of the entire thickness of the chest wall down to and including the parietal pleura may be necessary however for cure. In closing such a defect a pedicle flap of skin and subcutaneous tissue down to the deep fascia should be mobilized from adjacent tissues which were not in the original operative area and swung over the defect. Tissue from the medial part of the opposite breast may be used to cover a defect of the central thoracic wall and a flap from the anterior abdominal wall with a lateral pedicle is used for defects of the lower anterior thoracic area. Defects of the lateral thoracic wall are closed by pedicle flaps from the axillary region. Radiated tissue cannot be used for a pedicle flap. It may therefore be necessary to excise considerable tissue in order to obtain a flap of normal tissue if intensive radiation followed radical mastectomy. These wounds are improved as much as possible by frequent dressings, application of antibiotics, excision of dead tissue and swinging over a flap of tissue which has not been exposed to radiation.

The essential principles in transposing the opposite breast are to make a downward curved incision from the lower, median aspect of the defect to the remaining breast and then curving upward toward the anterior axillary as necessary. The breast is dissected free enough from the pectoral fascia to avoid tension, blood vessels being saved so far as practicable. Part of the upper abdomen is taken with a small breast. The nipple is not removed at this time to avoid unnecessary vascular damage but it may be removed later if desired.

If it is necessary to remove a large area of ribs, intercostal tissue and parietal pleura, the incision should be so planned that it will not lie over the central and weakest part of the wound. A staggered closure is desirable. The incision through the extrathoracic muscles should therefore not underlie the skin incision if these muscles are spared. The pleural defect should closed by a flap of fascia lata. This may be used whether the parietal pleura has been removed or not but is unnecessary if the periosteum of the ribs remains. This may be done by dividing the periosteum at both outer and inner rib margins and doing a subperiosteal resection of the side of the rib away from the tumor. This should not be done however if there is any risk of not having a safe margin of resection.

Repair of a chest wall defect without any periosteum or bone is not entirely satisfactory because is permits no motion or bulging. Use of tantalum

or other foreign body has been unsatisfactory in this location because of the difficulty of immobilizing a metal plate in a moving chest wall. Costal chondritis may develop if the area to be grafted after radical mastectomy overlies the costal cartilages. This may be prevented by mobilizing a flap of skin, subcutaneous tissue and possibly some of the pectoral muscle on the opposite side to cover the defect without grafting. 3 references. 7 figures.

FASCIA LATA GRAFTS FOR CHEST WALL DEFECTS.

William L. Watson and Arthur G. James, Memorial Hospital, New York, N. Y. J. Thoracic Surg. 16:399-406, August 1947.

Use of fascia lata grafts in closing large chest wall defects removes the need for a fixed foreign body in the chest wall. These had been impractical because they either sloughed out or became loose from the respiratory movements and had to be removed. Fascia lata is readily available for use without previous planning, will close a large as well as a small defect and adds support to the chest wall as well as making it airtight when it has been necessary to resect the entire thickness. These grafts are strong enough to prevent postoperative pulmonary herniation. The blood supply is apparently obtained from the external aspect of the chest wall, away from the pleural cavity, and is therefore not complicated by possible pleural effusion.

The case records are presented of 4 young patients in whom the surgical defects following removal of large tumors of the chest wall were closed by large, free fascia lata grafts. Technic of the operation is briefly described. A fascia lata graft of the same size as the defect is so placed in the chest wall that the side next the subcutaneous tissue is placed next to the pleura. This is secured to the periosteum and parietal pleura by multiple silk sutures and a No. 18 French catheter left in the pleural space to facilitate removal of free air in the pleura until the chest is entirely closed. The lung must be kept fully expanded postoperatively so that the graft is always pressed against its bed. 9 references. 7 figures.

FAT NECROSIS OF THE FEMALE BREAST.

Frank E. Adair and Jean Thompson Munger, Memorial Hospital, New N. Y. Am. J. Surg. 74:117-28, August 1947.

A report on 110 cases of fat necrosis of the breast is presented. This condition has been shown to be a definite entity which simulates many conditions and especially resembles cancer clinically and on gross tissue examination so that differential diagnosis is difficult. The previous history was absolutely negative as regards any cause of the condition in 62 patients. Sufficient trauma to produce ecchymosis had occurred in 21 cases, followed in the majority of instances by development of a mass at the site of trauma within a year. Patients with previous trauma gave a characteristic history of a single, well remembered, definite blow sufficient to pro-

duce considerable tissue injury in contrast to the vague traumatic history of breast cancer. There was no significant clinical difference between these cases with a previous history of trauma and those without. The pathology of the condition is reviewed. Fat necrosis in the breast is the same as occurs elsewhere in the body.

Pain was only present in 38 of these cases. The tumors were attached to the skin in 58 per cent of cases, an interesting fact since skin attachment of the tumor is usually a differential sign between cancer and other tumors. Elevation or retraction of the nipple occurred in 14 cases. The axillary lymph nodes were enlarged in 29 per cent of patients but were only considered metastatic in 9 of these. An original correct diagnosis of fat necrosis was only made in 17 of these cases before aspiration or excision. The first diagnosis was cancer in 30 cases. Only two unnecessary radical operations were done in this series. Aspiration biopsy was found a valuable diagnostic aid though not relied upon alone if the case did not show progressive improvement. A series of 10 illustrative case reports is presented.

This study indicated that the best designation for this condition is fat necrosis of the breast. No definite etiologic factor was found. A careful differential diagnosis between this condition and cancer is necessary in about 45 per cent of cases. Gross and microscopic examination of excised tissue is necessary for a positive diagnosis. The necessity of not submitting women to the mutilation of radical mastectomy unless the presence of a malignant tumor has been proved is emphasized. 8 references.

TREATMENT OF CANCER OF THE BREAST IN PREMENOPAUSAL PATIENTS WITH RADICAL AMPUTATION AND BILATERAL OOPHORECTOMY.

Guy W. Horsley, Richmond, Va. Ann. Surg. 125:703-17, June 1947.

Recent literature on the effects of the female hormone upon cancer of the breast is reviewed. The relationship of estrin to the causal and formal genesis of mammary cancer resembles that of testicular androgenic substance to carcinoma of the prostate. The good results which follow removal of the ovaries with radical operations for cancer of the breast are caused by removal of a causal or formal genesis or combination of both. Cancer of the breast has receded with no treatment except removal of the ovaries. On the other hand, in 13 of 15 cases, pregnancy after a radical breast amputation for cancer was promptly followed by the development of especially malignant cancer of the other breast, apparently because of the increased ovarian activity.

The final results of treatment of cancer of the breast in women under 40 years of age have not been good, their prognosis being much worse than is the case with postmenopausal cancer. Removal of both ovaries at the same time as a radical breast amputation for cancer was begun as a result of these poor results of treatment in younger women and experiments indicating a relationship between hormones and cancer. Castration of patients

with extensive carcinoma was followed by excellent results in the roentgenologic treatment of metastases with great relief from pain as well as local and general benefits. Tables of statistics on results of this treatment are presented. Results over a five year period showed 43.5 per cent of patients, chiefly in the postmenopausal period, cured without bilateral oophorectomy whereas 76.9 per cent of patients in the premenopausal period were cured by bilateral oophorectomy in addition to breast amputation. The use of testosterone propionate may cause further improvement postoperatively but should not be substituted for bilateral oophorectomy because the results are too uncertain. 19 references. 6 tables.

(*Almost anything can be proved in a laboratory using chosen strains of mice. Our moves as a profession must be based solidly on accurate statistics of results in human patients so that five years from now our work will seem not to be a fad.*—D. V. T.)

References to Current Articles

The Significance of Skin Recurrences Following Radical Mastectomy. David R. Oliver, St. Louis, and Everett D. Sugarbaker, Columbia, Mo. Surg., Gynec. & Obst. 85:360-67, September 1947. Presents a study of 26 cases of skin recurrences after radical mastectomy for cancer of the breast in relation to the preoperative findings. Decreasing the incidence of skin recurrences depends upon earlier diagnosis and treatment rather than on surgical technics. 22 references. 3 tables. 2 figures.

Indications for Simple Mastectomy. Danely P. Slaughter and Lawrence W. Peterson, University of Illinois College of Medicine, Chicago, Ill. Surg., Gynec. & Obst. 85:456-60, October 1947. Presents an analysis of 71 cases in which simple mastectomy was done and a discussion of the indications for this operation on the basis of this analysis. 5 references.

Carcinoma of the Breast. End Results. Massachusetts General Hospital 1933-1935. Grantley W. Taylor and Richard H. Wallace, Harvard Medical School, Boston, Mass. New England J. Med. 237:475-77, Sept. 25, 1947.

Carcinoma of the Breast, a Review of the First Three Years' Experience in the Cancer Section of the Westfield State Sanatorium. Frederick S. Hopkins and Nicholas Egnatz, Westfield, Mass. New England J. Med. 236:530-33, Apr. 10, 1947.

Cancer of the Breast and Its Treatment. Review of Foreign Medical Literature for 1941-46. (*Rak grudnoĭ zhelezy i ego lechenie. Obzor po materialam zarubezhnoĭ meditsinskoĭ literatury za* 1941-46). A. M. Patrik, U.S.S.R. Khirurgiya No. 4, 56-64, 1947.

Cystic Mastopathy and Its Relation to Cancer of the Mammary Gland. Theory of Precancer. (*Kistoznaya mastopatiya i ee otnoshenie k raku molochnoĭ zhelezy. K ucheniyu o predrake*). F. M. Lampert, Moscow, U.S.S.R. Khirurgiya No. 4, 21-26, 1947.

Modern Treatment in Cancer of the Mammary Gland. Radiotherapy Methods (*Luchevye metody v sovremennom lechenii raka molochnoĭ zhelezy*). M. P. Domshlak, The Central Oncological Institute, Ministry of Health, U.S.S.R. Khirurgiya No. 4, 17-21, 1947.

Carcinosarcoma of the Breast (*Kartsino-sarkoma grudnoĭ zhelezy*). A. S. Al'tshul', The Chkalov Medical Institute, U.S.S.R. Khirurgiya No. 4, 68-69, 1947.

Carcinoma of the Breast, With a Review of 197 Cases. George W. Hawk and R. Kent Markee, Guthrie Clinic and the Robert Packer Hospital, Sayre, Pa. Guthrie Clin. Bull., 17:5-11, July 1947.

The Object, the Value, and the Technique of Preoperative and Postoperative X-ray Treatment in Carcinoma of the Breast. George E. Pfahler and George P. Keefer, Philadelphia, Pa. Surg., Gynec. & Obst. 85:35-46, July 1947.

Carcinoma of the Breast. A Study of 298 Consecutive Cases. George G. Finney, Walter C. Merkel and Donald B. Miller, Baltimore, Md. Ann. Surg. 125:673-87, June 1947.

Carcinoma of the Breast. Results of Combined Treament with Surgery and Roentgen Rays. Samuel F. Marshall and Hugh F. Hare, The Lahey Clinic, Boston, Mass. Ann. Surg. 125:688-702, June 1947.

24. Diaphragm

References to Current Articles

Subphrenic Abscess Following Primary Closure for Pilonidal Sinus. Report of a Case. Elliott S. Hurwitt, Mt. Sinai Hospital, New York, N. Y. New England J. Med. 237:398-99, Sept. 11, 1947.

Phrenic Nerve Interruption. Technique and Indications. G. A. P. Hurley, Montreal, Que., Canada. Canad. M. A. J. 57:271-72, September 1947.

Hernia of the Diaphragm as a Complication of Labour. Bryan C. Murless, King Edward VIII Hospital, Durban, Union of South Africa. Brit. M. J. 4519:251-52, Aug. 16, 1947.

Large Diaphragmatic Hernia Without Symptoms. Report of Two Cases. Martin G. Goldner, Chicago, Ill. and Jack H. Levy, Augusta, Ga. Gastroenterology 8:788-92, June 1947.

Thoracogastric Fistula and Multilocular Empyema Complicating Post-Traumatic Diaphragmatic Hernia. George N. J. Sommer, Jr., Trenton, N. J., and Waldo O. Mills, Boston, Mass. J. Thoracic Surg. 16: 265-68, June 1947.

25. Abdominal Surgery

PALLIATIVE OPERATIONS IN CANCERS OF THE GASTRO-INTESTINAL TRACT (*Palliativnye operatsii pri rake zheludochno-kishechnogo trakta*).

A. D. Ochkin, The Botkin and Kreml Hospital, Moscow, U.S.S.R.
Khirurgiya No. 4, 48-56, 1947.

Of the total of 570 operations only 102 cases were followed up (64 men, 38 women; average age, 51 years). In cancers of the esophagus gastrostomy was done in 17 cases. Advantages: relief of constant feeling of hunger, elimination of spasms; temporary inhibition of the tumor growth; calmer state of the patient, etc. The disadvantages are: the inconveniences of feeding through the stoma, irritation of the skin, the unnaturalness of the process. Extension of the life span averaged 7.8 months (minimum 2, maximum 2.1 months). Of the 17 patients 7 lived six to twelve months, 6 twelve to eighteen months.

Jejunostomy was done in extensive cancers of the stomach, in order to make it possible for the food to move from the stomach into the intestines. The average gain of life span was 1.2 months in a group of 8 patients (5 lived less than a month, 1 three months, and 2 two months).

Gastroenterostomy performed in 43 cases opened the way for the food to enter the small intestines in cases of obstruction. The motor function of the stomach improved, which brought relief of pain. Nutrition became better, the patients appeared calmer. The average gain was 4.3 months, ranging from two to thirteen months.

In cancers of the large intestines two operations are possible: (1) intestinal fistula; (2) anastomosis. In obstructions, or as a preliminary to radical operation, type 1 was done. As a permanent measure it offers no prospects. Type 2, widely used, results in relief of constipation and intoxication, retards the growth, and restores calmness. Of the 14 patients followed-up 7 lived six to twelve months. The gain averaged six months (from one to twenty-one months).

In cancers of the rectum rational surgery is limited to sigmoid fistula. Retardation of growth, relief of constipation and of intoxication are the positive features. A group of 5 patients gained one to fifteen months, averaging five months, and all adjusted themselves to the inconveniences of this operation.

In cancers of the papilla of Vater or of the head of the pancreas, obstructional jaundice is common. Here the patient's grave condition necessitates a fistula of the gallbladder, to prevent acholia. Within two to three months anastomosis of the fistula with the stomach and the duodenum relieves the inconvenience of an open fistula. In cases of wrinkled gallbladder echolecystitis develops, which calls for anastomosis between the gallbladder duct and the stomach or the duodenum. With the growth of cancer the papilla of Vater will obstruct the duodenum, hence an auxiliary palliative

gastro-intestinal anastomosis had to be done. The results are very good. The patient, cured of jaundice, gains weight, improves in general health, and will live on the average eight months longer. A group of 10 cases gained from one to twenty-nine months.

It is concluded that such palliative operations are well warranted, and must be more widely used.

MUSCULAR DEFENSE AND HEAD'S ZONES (*Défense musculaire und Headsche Zonen*).

C. van Gelderen, Amsterdam, Holland. Acta chir. Scandinav. 94:429-42, No. 5, 1946.

In abdominal pathology the condition of general or local involuntary tension is known as muscular defense. Head's zones are regions of the body walls or limbs where visceral pains seem to originate. Many authors have suggested the possibility of some relationship between the two phenomena. It is not yet definitely known which nerves are responsible for the above state of muscular contraction. The reflexes originate both in the viscera and in the parietal peritoneum, as a result of irritation. The author believes that both the central and the autonomous nervous system participate in the mechanism of muscular defense. The two types of reflexes travel first by different nerve paths (vegetative and somatic, respectively), but then follow mutual efferent paths in the walls of the body. Thus sensations in Head's zones due to irritation are actually produced. They are not phantom sensations known as pain irradiation but actual reflex sensations, with sympathetic reflexes predominating among those sent to Head's zones.

In contact peritonitis muscular tension predominates, but hyperesthesia (Head's zones) is likewise present. In abdominal conditions not involving the peritoneum Head's manifestations predominate. The use of anesthesia in the region where the reflex originates eliminates both Head's hypersensitivity and muscular defense. The proposed paths are shown schematically by the author. The afferent path (as, for instance, upward along the phrenic nerve may take the impulse to the spinal cord and end there (i.e., in the stellar ganglion), or go further up to the thalamus. In the former case it goes down within the spinal cord, the segmental spreading extending, say, from C4 to Th., the rising along the efferent path, until it comes to the cutaneous region of the shoulder (Head's zone).

The proposed conception may prove of use in postoperative handling of fresh cases. For instance, meteorism may be reduced by lumbar anesthesia, etc. 17 references. 1 figure.

CONGENITAL ATRESIA OF INTESTINE AND COLON.

Willis J. Potts, The Children's Memorial Hospital, Chicago, Ill. Surg., Gynec. & Obst. 85:14-19, July 1947.

The following characteristic symptoms and findings present themselves during the first few days of life.

Vomiting begins the first or second day, depending upon the level of obstruction. By the third day of life the vomiting is usually greenish-brown and has a foul odor. The vomitus contains bile as the obstruction is usually below the ampulla of Vater.

Distention varies with the level of obstruction. If the obstruction is in the duodenum the abdomen is scaphoid. If the obstruction is in the ileum-the most common site - intestinal patterning is visible.

Roentgenologic examination is of great help in establishing a diagnosis. The roentgenograms should be made with the infant in the upright position. If obstruction is present, widely distended loops of bowel showing fluid levels can be seen. The administration of barium to these children is unnecessary and is condemned. A rectal examination is in order to determine patency.

Preoperative Care: - Parenteral fluid is always necessary for these children who are admitted in various stages of dehydration. Isotonic solution of saline 10 to 15 cc. to each pound of body weight every twenty-four hours is sufficient. Enough dextrose solution should be given to bring the total intake in twenty-four hours up to about 75 cc. per pound of body weight. Blood transfusions and plasma should be used as indicated.

Operation: - Before the operation is begun while the patient is on the operating table, the stomach must be thoroughly emptied with a catheter. Drop ether with an open mask is the most satisfactory anesthetic. The abdomen is opened through a right rectus incision and the bowel is allowed to extrude from the wound. When the point of obstruction is identified, salt solution is injected into the collapsed bowel distal to the obstruction to distend the bowel and to demonstrate other points of atresia. The distended bowel is aspirated with a large needle. All the fluid and air are removed. The needle is put in at the point where the anastomosis is to be made. A side to side anastomosis is done between the proximal and distal loops using two layers of suture. We prefer No. 5-0 Deknatel braided silk on a curved No. 9 atraumatic needle. It is important to take small bites during suture so as not to encroach upon the lumen of the collapsed bowel.

Postoperative Care: - The child is given penicillin intramuscularly every three hours. A Wangensteen suction apparatus is attached to a catheter in the stomach immediately after operation and suction continued for forty-eight hours. On the third day the catheter is removed and a postpyloric regimen of feeding is begun cautiously. By the seventh day the child is usually on a maintenance diet. However, one should not increase the diet too rapidly.

Conclusions: - Earlier diagnosis, chemotherapy, proper suture material, and physiologic preoperative and postoperative care have improved the outlook for infants with congenital atresia of the bowel.

Five cases of atresia of the bowel with 1 death are reported. Review of medical literature indicates that the patient with congenital atresia of the transverse colon included in this report is the first to survive surgery. 6 references. 9 figures.

Author's abstract.

PREPARATION OF PATIENTS FOR LAPAROTOMY (*Sur la préparation des patients pour la laparotomie*).

E. Tiitinen, University of Helsinki, Helsinki, Finland. Ann. chir. et gynaec. Fenniae 35:41-56, No. 1, 1946.

Postoperative complications in the circulation, respiratory system, digestive tract or metabolism (equilibrium of the biologic fluids, etc.) may be very dangerous, and should be avoided at all cost. The respiratory system is threatened by acute bronchitis, pulmonary embolism or abscess, etc. Sinusitis and catarrhal conditions should be treated prior to operation. Avitaminoses contribute to infections and must be treated with synthetic vitamins. Barbiturates and morphine derivatives should be given in small doses just before anesthesia. Overdoses create pulmonary complications by depressing the respiratory centers. Breathing exercises before and after operation drive out the narcotics quickly and prevent pulmonary involvement. The digestive tract should be treated before operation, if necessary. Extraction of teeth and tonsillectomy should, however, never be done prior to operation, except in an emergency, in which case it is necessary to wait until the wounds have completely healed. In stomach diseases the diet should contain much protein. The stomach should be emptied two hours before operation. After the operation activity should be resumed as soon as possible. If the intestines are normal, enemas, but not laxatives, should be given, except in stubborn constipation. In icteric conditions vitamins K, A, D and C, as well as calcium and blood transfusions (native blood) daily are of help. In intestinal obstructions gas accumulation must be treated before operation.

Equilibrium of body fluids: - Protein should be used in treating conditions where loss of blood is high, also in cases of dehydration (biliary or pancreatic fistulas, etc.). Loss of chlorides should be counteracted by 0.5 Gm. of sodium chloride per kilogram of body weight. A 5 per cent glucose solution is also given by mouth or intravenously. Acidosis and alkalosis are treated, respectively with a 1.3 per cent sodium bicarbonate solution, intravenously or subcutaneously, and with hydrochloric acid (36 per cent dissolved in physiologic salt solution (5 cc. in 100 cc.).

Shock (*decrease of circulating volume of blood*): - Low arterial tension, decreased *p*H of the blood, decrease of blood bicarbonate and of blood proteins, are the characteristic signs. Intravenous transfusions (fresh or citrated blood, plasma, albumin solution) are of great effectiveness, if given in sufficient number. Operation must not be done until the arterial pressure is normal (110/140). 23 references.

THE DIAGNOSIS OF ABDOMINAL TRAUMA IN WARFARE.

C. G. Rob, St. Thomas's Hospital, London, England. Surg., Gynec. & Obst. 85:147-54, August 1947.

The importance of a careful preoperative examination and diagnosis in these cases is illustrated by the fact that no visceral lesion was found in 12 per cent of 560 laparotomies performed on battle casualties. The unnecessary laparotomy was the principal cause of death in 29 per cent of this group.

An analysis of 166 cases having definite abdominal signs and symptoms is presented. A general survey of the patient is the first step in diagnosis. The fact that patients without a lesion of the alimentary canal either do not need resuscitation or respond rapidly is important diagnostically. The wound track is evaluated clinically by the preoperative appearance, rectal examination and catheterization, radiologic examination when possible, localizing signs and symptoms and findings on wound excision. The position of the patient when injured should be obtained as it explains unusual wound tracks. Every wound which might have penetrated the peritoneum should be excised whether or not a laparotomy is expected. This will often show if the abdomen should be opened. Auscultation of the abdomen should be done to determine the presence or absence of peristaltic sounds. A persistent absence of peristaltic sounds definitely indicates laparotomy while their presence suggests but does not positively indicate conservative treatment. In this series, peristaltic sounds were absent in 89 of 95 lesions of a hollow viscus and present in 70 of 71 cases with no such lesions.

The possibility of missing an extraperitoneal intestinal tear can usually be avoided by wound excision and exploration but a bullet may cause an intestinal rupture with an intact peritoneum. Peritonitis of the rectovesical pouch can be diagnosed by digital and proctoscopic rectal examination before spreading to the general peritoneal cavity. Unnecessary laparotomy has usually been done in simple hemoperitoneum because no roentgen equipment was available. Peristalsis is practically always present when a wound of the liver is the only lesion even with a large hemoperitoneum. These cases should be treated conservatively and carefully watched for more bleeding. Catheterization shows hematuria in kidney wounds but wound excision and exploration show the wound track and enable accurate palpation of the kidney so that the necessity for nephrectomy can well be determined. Suprapubic cystotomy must be performed for either intraperitoneal or extraperitoneal bladder wounds. A roentgenogram is necessary to determine the position of a foreign body in relation to the diaphragm. Injury to a hollow viscus on the left side is indicated by persistently absent peristalsis. Abdominal tenderness associated with a chest wound alone should be easily diagnosed. Wounds of the buttocks are common and the missile may be found anywhere from the shoulder to the knee depending largely on the position when wounded. A roentgenogram is important to locate the foreign body and should also be carefully examined to detect bony spicules

which may have penetrated the peritoneal cavity. These wounds must be regarded with suspicion until injury to the alimentary or urinary tracks can be eliminated. The question of laparotomy in cases of spinal wounds with abdominal hyperesthesia is difficult to decide when the patient is seen late. Ileus distention occurs earlier in spinal wounds than with general peritonitis. Peristalsis is faint but always present.

Cases of visceral perforation seen more than thirty-six hours after injury are treated as indicated. Massive doses of plasma are invaluable to replace that lost from the inflamed peritoneum. Extraperitoneal wounds of the colon can only be diagnosed by wound excision. Abdominal blast injuries are difficult to diagnose and 2 cases are presented in detail. Faint peristalsis was heard in both and no laparotomy was done. Both cases recovered but at least one would have died if laparotomy had been performed.

The importance of planning the laparotomy incision is emphasized. A correct evaluation of all diagnostic factors is essential. An oblique flank incision in wounds of the right or left colon saves additional peritoneal soiling and permits inspection of viscera. 6 references. 2 tables.

References to Current Articles

Sarcomas of the Small and Large Intestine. J. Rabinovitch, D. M. Grayzel, A. J. Swyer and M. B. Pines, Jewish Hospital, Brooklyn, N. Y. Surg., Gynec. & Obst. 85:333-39, September, 1947. Reports 15 cases of sarcoma of the intestine, of which 9 involved the small intestine, 5 the colon and 1 the rectum. Compared with the incidence of carcinoma of the intestines in the same period, the incidence of sarcoma was much less even in the small intestine. 3 references. 6 figures.

Time of Election for Abdominal Surgery in Childhood. Edward J. Donovan, College of Physicians and Surgeons, Columbia University, New York, N. Y. New England J. Med. 236:947-39, June 19, 1947.

Massive Gastrointestinal Bleeding Following Exposure to Low Pressure. W. Wilson Schier, Massachusetts General Hospital, Boston, Mass. New England J. Med. 236:898-901, June 12, 1947.

War Wounds of the Abdomen. Claude E. Welch, Harvard Medical School, Boston, Mass. New England J. Med. 237:156-62, July 31, 1947.

Simple Technic of Suturing in Gastro-Intestinal Anastomoses. Hyman Sneierson, Binghamton City Hospital, Binghamton, N. Y. Am. J. Surg. 73:592-95, May 1947.

Glenard's Disease (Generalized Visceroptosis). The Importance of Some of Its Complications. Philip Thorek, Chicago, Ill. Am. J. Surg. 73:597-601, May 1947.

Injuries to the Abdomen in Industry. Grover C. Penberthy and Clifford D. Benson, Detroit, Mich. Am. J. Surg. 74:346-49, September 1947.

New Principle in Mechanical Abdominal Retraction. David J. Wexler, Southside Hospital, Long Island, New York. Am. J. Surg. 74:103-106, July 1947.

Abdominal Symptoms in Sudden Acute Heart Conditions. Matthew A. Larkin, Albany, N. Y. Am. J. Surg. 74:49-53, July 1947.

Gross Intestinal Hemorrhage in Infants and Children. Edward J. Donovan, Columbia University, St. Luke's and Babies' Hospital, New York, N. Y. S. Clin. North America 27:443-46, April 1947.

The Measurement of Volume of Gas in the Digestive Tract. H. A. Blair, R. J. Dern and P. L. Bates, University of Rochester School of Medicine and Dentistry, Rochester, N. Y. Am. J. Physiol. 149:688-707, June 1947.

Retroperitoneal Cysts. H. Minor Nichols, Portland, Ore. Ann. Surg. 126: 340-49, September 1947.

The Effect of Heparin Upon Intra-Abdominal Adhesions in Rabbits. B. M. Bloor, Hugh Dortch, Jr., T. H. Lewis, R. F. Kibler and K. S. Shepard, Duke University School of Medicine, Durham, N. C. Ann. Surg. 126: 324-31, September 1947.

Duplications of the Alimentary Tract. Report of Six Cases. Edward J. Donovan and Thomas V. Santulli, New York, N. Y. Ann. Surg. 126: 289-304, September 1947.

Subperitoneal Hemorrhage From Vitamin C Deficiency Simulating Acute Surgical Abdominal Conditions. Laurence E. Hines, St. Joseph Hospital and Northwestern University Medical School, Chicago, Ill. Surg., Gynec. & Obst. 85:214-16, August 1947.

Mesenteric Tumors. Herbert D. Adams, Lahey Clinic, Boston, Mass. S. Clin. North America 27:666-69, June 1947.

Enteric Cyst. Victor E. Tedesco and John H. Connell, Huey P. Long Charity Hospital, Pineville, La. Am. J. Surg. 74:226-27, August 1947.

Enormous Intra-Abdominal Hydrocele. D. P. Burkitt and B. N. Kununka, Anglo-Iranian Oil Co. Hospital, Abadan, S. Persia. Brit. M. J. 4517: 175, Aug. 2, 1947.

Thoracicoabdominal Approach to Upper Portion of Abdomen and Upper Pole of Kidney. Fred R. Harper, Denver, Colo. Arch. Surg. 54: 517-28, May 1947.

Tumors of the Gastrointestinal Tract. A Survey of 813 in Persons of Military Age During World War II. J. C. Ehrlich (Major, M.C., A.U.S.) and O. B. Hunter, Jr. (Major, M.C., A.U.S.), Army Institute of Pathology, Washington, D. C. Surg., Gynec. & Obst. 85:98-106, July 1947.

Abdominal Actinomycosis. Edward M. Farris, Oklahoma City, Okla., and Russell V. Douglas, Emory University School of Medicine and Grady Memorial Hospital, Atlanta, Ga. Arch. Surg. 54:434-44, April 1947.

Newer Methods of Abdominal Drainage. W. Wayne Babcock, Temple University School of Medicine, Philadelphia, Pa. Arch. Surg. 54:365-73, April 1947.

26. Abdominal Wall

References to Current Articles

An Evaluation of Abdominal Wound Closure. Steel Wire Layer Closure Compared With Catgut-Silk Layer Closure, Early and Late Results. H. M. Wiley and Everett D. Sugarbaker, Ellis Fischel State Cancer Hospital and National Cancer Institute, Columbia, Mo. Surg., Gynec. & Obst. 85:81-84, July 1947.

27. Hernia

THE SUBCUTANEOUS INGUINAL RING. A CLINICAL STUDY. *James L. Chassin, New York Postgraduate Medical School and Hospital, New York, N. Y.* Surgery 22:540-44, September 1947.

A study of 3,199 soldiers between 18 and 36 years old was made to determine the range of sizes of subcutaneous or external inguinal rings in large numbers of healthy young men. It was found that 78.1 per cent of these men had external rings sufficiently large to admit the index finger, almost half being 1.4 to 1.9 cm. This does not agree with the previous statements of many authorities and indicates that normal external rings vary widely in size and average appreciably larger than formerly believed. In 724 men with asymmetric rings, the larger occurred on the left side in 57.5 per cent but 58.3 per cent of inguinal hernias discovered during this study occurred on the right side. There was no convincing evidence to indicate that a large subcutaneous ring is abnormal or that it predisposes to future herniation. No correlation could be demonstrated between the size of the subcutaneous ring and the weight or height of the subject. 23 references.

FEMORAL HERNIA WITH GANGRENOUS BOWEL.

Clarence Dennis and Richard L. Varco, University of Minnesota Hospitals and Minnesota General Hospital, Minneapolis, Minn. Surgery 22: 312-23, August 1947.

An operation for strangulated femoral hernia containing gangrenous intestine avoiding contamination is described in detail. It is safer to spend three or four hours in necessary laboratory examinations and providing at least partially adequate hydration because a badly dehydrated patient cannot stand the operation. The stomach is emptied by a Wangensteen tube and suction and necessary water and salt given. The Miller-Abbott tube should not be used because it requires excessive time. Experience has showed that fluids equivalent to about 7 per cent of the body weight are needed in the first twenty-four hours, half as 0.9 per cent saline solution and half as 5 per cent glucose in distilled water. One-third to one-half is given in the three hours immediately before operation. A catheter is put in the bladder to aid in estimation of the condition of hydration and to keep the bladder out of the operation field.

Local block anesthesia has been found safest and offers the best re-

laxation. Mesenteric infiltration is essential. The patients do not cough or aspirate regurgitated stomach contents as readily as patients under general anesthesia. As much as two and a half to three hours is spent in giving block anesthesia and later reinforcement given periodically. Restlessness is managed by a comfortable position and small doses of morphine or intravenous pentothal.

A vertical incision is made over the hernial bulge and carried down to the peritoneum, frank gangrene being recognizable through this without opening the sac. If it is not apparent, neither pus formation nor heavy bacterial contamination has occurred. Dissection is stopped here when the intestine is gangrenous, a 2 cm. incision made above and parallel to the inguinal ligament and the vertical incision extended to join it, making a T-incision. The entire sac and contents are resected intact in order to avoid bacterial contamination of tissues to be used for repair. This is accomplished by freeing the sac and contents above without releasing the neck. The peritoneum is opened parallel with the oblique skin incision, involved omentum is cut and ligated close to the neck and the mesentery of the small intestine entering the sac divided from the proximal to the distal side of the incarcerated intestinal loop. Each limb of bowel is clamped by two Ochsner clamps and the intestine divided between them with the cautery. The inguinal ligament is then divided near its attachment to the pubis and split laterally, enough of the heavy aponeurotic tissue being left in front of the neck of the sac to prevent it from relaxing and releasing the contaminated contents. The entire sac is then freed by dissection down to the remains of the ring which is cut under direct vision and the complete contaminated mass removed without soiling the field. The internal oblique and transverse abdominal muscles are sutured to Cooper's ligament as far as the femoral vein and to the inguinal ligament lateral to this. The posterior layer of the anterior rectus sheath is sometimes incised to relax the tissues but this is usually unnecessary. The inguinal ligament is repaired by suturing it to the lacunar ligament and Cooper's ligament as far medially as possible without excessive tension.

A series of 10 patients with gangrenous intestine in the hernial sac were operated by this method with 2 deaths, 1 from phlebitis on the opposite side and 1 pneumonia and heart failure. The 2-layer anastomosis is used because of the importance of precision suture placement in end to end iliac anastomosis when there is considerable difference in size between the ends. The sulfonamides and penicillin are usually but not always used. These patients are kept in bed three or four days until after strength has begun to return. 11 references. 2 tables. 9 figures.

References to Current Articles

The Origin of Gas in the Loops of Small Intestines in Hernia (*K voprosu o proiskhozhdenii gaza v petlyakh tonkogo kishechnika pri gryzhakh*). S. V. Pruzhanskiĭ, The Molotov Central Research Institute of Roentgenology and Radiology, U.S.S.R. Khirurgiya No. 3, 58-62, 1947.

Diaphragmal Strangulated Hernias. (*O diafragmal'nyh ushchemlennykh gryzhakh*). M. A. Gladkova, The Omsk Medical Insitute, U.S.S.R. Khirurgiya No. 3, 55-58, 1947.

Incarceration of the Stomach in an Umbilical Hernia. Thomas G. Orr, Kansas City, Kan. Am. J. Surg. 74:96-97, July 1947.

Hernia in Childhood. Charles E. Farr, Cornell University Medical College, Staten Island and Northern Westchester Hospitals, New York, N. Y. S. Clin. North America 27:447-51, April 1947.

Strangulated Femoral Hernia. Surgical Management. J. Parran Jarboe and Joseph H. Pratt, Mayo Clinic, Rochester, Minn. Surg., Gynec. & Obst. 85:185-94, August 1947.

Living Fascial Sutures in Inguinal Herniorrhaphy. Eugene A. Gaston, Framingham Union Hospital, Framingham, Mass. Arch. Surg. 54:414-29, April 1947.

Treatment of Large Ventral Incisional Hernia. Herman A. Pink, Pittsburgh, Pa. Am. J. Surg. 74:136-42, August 1947.

Rationale and Factors for Consideration in Cooper's Ligament Hernioplasty. Claud C. Burton, Dayton, Ohio. Surg., Gynec. & Obst. 85:1-8, July 1947.

28. Peritoneum

References to Current Articles

Prevention of Peritoneal Adhesions by Transplantation of Amnion. Andrew Kubanyi, Budapest, Hungary. Brit. M. J. 4514:55-56, July 12, 1947. Reports a case in which sterile amnion was used to replace a defect in the peritoneum after repeated abdominal operations. This method has been used in 3 other patients with good results (observation period was two to three years). 3 references.

An Improved Method for Producing Experimental Peritonitis of Intestinal Origin in Dogs. Sanford Rothenberg, Henry Silvani and H. J. McCorkle, University of California Medical School, San Francisco, Calif. Surgery 22:550-51, September 1947.

Postoperative Spontaneous Pneumoperitoneum. John J. Cunningham, Our Lady of Lourdes Hospital, Binghamton, N. Y. Am. J. Surg. 73:725-27, June 1947.

Pneumoperitoneum in the Treatment of Pulmonary Tuberculosis. M. Aronovitch, Lloyd A. Caswell and Jarrah A. Zadé, Grace Dart Home Hospital, Montreal, Que., Canada. Canad. M. A. J. 57:122-26, August 1947.

29. Stomach and Duodenum

HYPOGLYCAEMIA FOLLOWING PARTIAL GASTRECTOMY.

J. A. L. Gilbert and D. M. Dunlop, University of Edinburgh Royal Infirmary, Edinburgh, Scotland. Brit. M. J. 4521:330-32, Aug. 30, 1947.

Routine follow-up of 45 consecutive cases of partial gastrectomy for peptic ulcer showed that postprandial hypoglycemia occurred in 17. The symptoms developed a half to one and a half hours after taking food and included palpitation, dizziness, sweating, weakness, epigastric discomfort and unconsciousness in several cases. These symptoms occurred much more frequently than stomal ulcer and anemia and rendered 5 patients unfit for employment. This syndrome may not be brought out unless leading questions are asked because the symptoms are not dyspeptic and patients do not associate them with their operation.

Production of hypoglycemic symptoms is determined by the maximum fall in blood sugar, the minimum level attained and the maximum rate of fall. The physiologic basis for postgastrectomy hypoglycemia is discussed. The gastric remnant empties rapidly, especially after a rich carbohydrate meal. It is suggested that the food is so rapidly absorbed from the jejunum that an abnormally rapid rise in blood sugar occurs, sometimes causing glycosuria. This induces the secretion of excessive amounts of endogenous insulin with a resulting rapid drop of sugar concentration to an exceptionally low level. Concentrations below 60 mg. per 100 milliliters were noted in 9 cases. Symptoms of the so-called dumping syndrome are the same as those of postprandial hypoglycemia and it is thought probable that these conditions are identical. It is not believed that the syndrome is the result of excessive vagotonia because it is characterized by a tachycardia while vagal stimulation would cause a bradycardia.

If this theory that the primary cause of postprandial hypoglycemia or the dumping syndrome is the extremely rapid emptying of the gastric remnant into the jejunum, it would seem that treatment should be planned to delay gastric evacuation and absorption of sugar by the jejunum. High fat diets or administration of 1 ounce of olive oil before meals was therefore used with some success in the treatment of hypoglycemia. Ephedrine in $\frac{1}{2}$ grain doses a half hour before the three main meals has also been useful in preventing reactive hypoglycemia. It was found better to give six small instead of three larger meals. 8 references. 2 tables. 3 figures.

TREATMENT OF DUODENAL ULCER.

Richard Lewisohn, New York, N. Y. J. A. M. A. 134:571-75, June 14, 1947.

Partial gastrectomy versus palliative resection in the treatment of duodenal ulcers and avoidance of postoperative peptic ulcer is discussed. Gastro-enterostomy is now only used for expediency. A proper nomenclature is essential for statistics. Subtotal gastrectomy is defined as the resection

necessary for very large gastric ulcers and includes transection below the pylorus with resection of four-fifths of the stomach above the pylorus. Partial gastrectomy means removal of the lower two-thirds of the stomach with the pylorus and duodenal ulcer. The operation should be called a palliative resection if the duodenal ulcer is not removed.

It now definitely has been showed that the ulcer and the pylorus must be completely removed for satisfactory results. The importance of complete removal of the pylorus however is still often unappreciated. The fact that an ulcer is on the posterior wall of the duodenum or adherent to the adjacent structures does not prevent its resection. Not more than 5 per cent of cases are nonresectable. Successful operation depends upon safe closure of the duodenal stump. The dissection must therefore be below and not above the ulcer and enough normal duodenum must be freed posteriorly, especially from the pancreas, to permit safe 2-layer closure of the stump. The first layer of sutures is the most important and a leak will occur unless it is carefully done. The second row reinforces the first and sometimes a third row is introduced to fix the duodenal stump to the pancreatic capsule. Postoperative drainage is unnecessary if this operation is properly done.

The hemorrhage usually stops from bleeding ulcers after a few transfusions but profusely bleeding cases should be operated upon as soon as possible and before they are hopelessly exsanguinated. 10 references. 5 figures.

(*It is unquestionably important to remove the pyloric ring, but it is only necessary to remove the entire ulcer, first, if it is found necessary to remove it to effect a satisfactory closure of the duodenal stump, and second, if the operation is being performed for an acutely bleeding duodenal ulcer.* —J.M.W.)

REOPERATIVE SURGERY FOR RECURRENT PEPTIC ULCERATIONS.

M. E. Steinberg, University of Oregon Medical School and Emanuel Hospital, Portland, Ore. Surg., Gynec. & Obst. 84:1029-37, June 1947.

Results of primary or secondary gastrectomies in 300 patients for duodenal or gastric ulcers and 71 patients with unsuccessful previous gastric resections are presented. The mortality was 1.3 per cent in the first group and 4.1 per cent in the second.

Postoperative jejunal ulcers follow inadequate gastro-enterostomies and gastrectomies, having been shown to be caused by the changed intestinal secretions. The type of gastrectomy has an important bearing on their incidence, the Billroth II operation being much more frequently followed by jejunal ulcer than the standard subtotal retrocolic resection which has been shown to be the only short-circuiting operation capable of protecting against it. Small gastrojejunal stoma or kinks and narrowing of the jejunum below the anastomosis have been shown to predispose to jejunal ul-

cer by causing a jejunal stasis. The different operations for cure of jejunal ulcers but which frequently fail are summarized. They include all short-circuiting operations which remove the alkaline duodenal secretions from the area of the anastomosis, the various types of exclusion operations, minimal gastrectomy, antecolic radical gastrectomy, the proximal "Y" anastomosis gastrectomy and the gastrectomy with a small stoma. A jejunal ulcer frequently follows if any gastric mucosa is left in the excluded musculature.

Occurrence of postoperative jejunal ulcer was prevented by doing the standard retrocolic primary or secondary radical gastrectomy with a proximal short loop and a wide stoma in a series of 339 patients. Serious postoperative hemorrhage was prevented by doubly ligating mesenteric vessels and using hemostatic sutures in the gastrojejunal anastomosis. No serious or disabling postoperative symptoms and no jejunal ulcers developed in one to twenty-four years. 21 references. 5 tables. 3 figures.

(*There is as yet no agreement among surgeons of experience as to which type of resection is preferable for peptic ulcer. The anticolic adherents are just as enthusiastic as the postcolic and have presented large groups of patients with a low operative mortality and satisfactory end results. It is extremely unusual for a follow-up of as large a series of patients submitted to gastric resection for peptic ulcer to reveal not one instance of recurrent ulceration and no patient to have disturbing postgastrectomy symptoms. We hope this exceptional group of patients will continue to do well in the next few years and a more thorough postoperative check-up at that time should be conclusive.*—J. M. W.)

PREVENTION OF EVACUATION DIFFICULTIES OF THE STOMACH AFTER PARTIAL GASTRECTOMY.

R. Ringdal, The Aker Hospital, Oslo, Norway. Acta chir. Scandinav. 94:397-405, No. 5, 1946.

The author has successfully modified the technic of retrocolic end-to-side, and other types, of gastrojejunostomy (Finsterer-Hofmeister) in order to prevent gastric retention which often follows such operations. The new technic was demonstrated on 105 cases of chronic duodenal and gastric ulcers. One case ended fatally (duodenal ileus, fistula, peritonitis), 8 developed postoperative gastric retention.

The modification is based on the proved fact that each peristaltic wave is preceded by contraction of the longitudinal muscles of the small intestine. The author's objective was to have the jejunal loop thus contracted, thereby aiding peristalsis through the circular muscle fibers.

The procedure consisted in exposing the jejunal loop by means of abdominal incision. Two auxiliary traction sutures were made subsequently (5 and 22 cm. from the duodenal flexure). Next the loop was left uncovered for ten to fifteen minutes, which led to contraction of the longitudinal fibers between the sutures, extending 6 to 9 cm. The anastomosis was sutured while the jejunum was contracted. In retrocolic gastrojejunostomy

the left edge of the slit in the transverse mesocolon was sutured to the posterior wall of the stomach prior to anastomosis, and the right edge sutured to the anterior wall (final step). Local anesthesia was used, in combination with anesthesia of the splanchnic nerve and a little ether inhalation. 5 references. 2 tables.

TOTAL GASTRECTOMY.

Samuel F. Marshall and Lowell H. Brown, Lahey Clinic, Boston, Mass. S. Clin. North America 27:621-30, June 1947.

Total gastrectomy is a valuable procedure in properly selected cases. Total gastrectomy was performed upon 95 patients at the Lahey Clinic between 1929 and Jan. 1, 1947. There were 27 postoperative deaths. Fifteen of these deaths were caused by contamination and infection, such as peritonitis, abscess, etc. Eight deaths followed serious chest complications such as pneumonia, mediastinitis, and pulmonary infarction. Many of the complications in the earlier cases could have been avoided by chemotherapeutic agents, but the most important factors are clean surgery and lack of trauma and contamination. Four deaths were caused by cardiovascular complications. The operative mortality in 46 cases in which operation was done from 1927 to January 1942 was 41.3 per cent whereas the operative mortality in 49 consecutive cases since 1942 was only 16.3 per cent.

The only definite indication for total gastrectomy is when a tumor so involves the stomach that it cannot be completely removed otherwise. The spleen should also be removed in most of these cases. The transabdominal approach is preferable since it carries less operative risk and allows more thorough removal of lymph nodes. Spinal anesthesia has been routinely used. A long left rectus incision is made up to the costal margin and down below the umbilicus. The amount of stomach involvement is determined and a search is made for peritoneal implants and liver metastases. The omentum is detached from the colon to find if the tumor has spread to the pancreas or retroperitoneal structures. The spleen is removed. The stomach is completely mobilized, turned upward over the left costal margin, but is not detached from the esophagus until the anastomosis between the esophagus and jejunum is begun by completing the posterior suture line of the anastomosis. Entero-enterostomy is always done between efferent and afferent loops of jejunum, which permits direct passage of bile and pancreatic juices from the proximal to the distal loop of jejunum without coming in contact with the lower end of the esophagus. The anastomosis prevents dilation and obstruction of the proximal jejunal loop which may occur at the esophagojejunal anastomosis because of edema or esophageal narrowing at the suture line. 10 references. 1 table. 6 figures.

(*It is significant that an entero-enterostomy is believed advisable following total gastrectomy as a few years ago the same clinic did not feel it a necessary part of the procedure. After doing total gastrectomies with and without the enterostomy, they have come to the logical conclusion that it should always be made part of this operation.*—J. M. W.)

TOTAL GASTRECTOMY.

Henry R. Ransom, University of Michigan Medical School, Ann Arbor, Mich. Arch. Surg. 55:13-30, July 1947.

Total gastrectomy consists of the complete removal of the stomach with an esophageal and duodenal cuff above and below. It is the accepted surgical treatment for gastric lesions which cannot be adequately treated by partial or subtotal gastrectomy, usually carcinoma or lymphosarcoma involving most of the stomach. Complete gastrectomy is the best operation for an abdominal resection of a juxtaesophageal gastric ulcer as retention of the lower part of the stomach is unnecessary and makes the operation more difficult.

Observations on a series of sixty total gastrectomies are presented and the operation described. This operation is done for carcinomas involving all, or nearly all, of the stomach, for smaller neoplasms high on either curvature or so situated that they cannot be resected without including the lower end of the esophagus, or for sessile or polyloid lesions in the lower or middle stomach with an indefinite upward intramural extension. Lymphosarcoma requires the same radical treatment as carcinoma. Total gastrectomy was only done for one benign tumor in this series. That was for a large hourglass neurofibroma. The operation was performed in 4 cases of high chronic benign ulcer with 1 death. Prolonged intensive medical treatment had failed to cure these patients and malignancy was suspected. It is believed that local excision of the ulcer with gastrectomy or transthoracic resection of the upper stomach with the ulcer is a better and safer procedure.

Technical considerations are reviewed. A long period of preoperative preparation is necessary with adequate blood transfusions, large amounts of ascorbic acid and vitamin B complex plus vitamin K if indicated for prothrombin deficiency. Oral hygiene is important. Sulfadiazine or penicillin is given for a few days preoperatively. Continuous Wangensteen suction is carried on during the operation. Endotracheal anesthesia with a nitrous oxide-oxygen-ether or endotracheal cyclopropane anesthesia with curare are preferred. Allen's operation with a retrocolic anastomosis is done when possible. Splenectomy theoretically increases the likelihood of postoperative thrombosis but it greatly improves the exposure for total gastrectomy. It is also indicated when there is malignant involvement of the spleen or glands at the hilus. Local use of the sulfonamide drugs has been practically discontinued in the peritoneal cavity. A fairly normal dietary routine is gradually resumed postoperatively. Occasional dysphagia caused by slight contracture at the stoma is quickly corrected by a few dilatations with the Hurst dilators.

The operative mortality in this series was 22.6 per cent but 29 of 31 patients surviving the operation died in six to eighteen months. The results obtained are essentially the same as with the usual treatment of gastric cancer but the operation is considered definitely worth while. 18 references. 5 tables. 6 figures.

(*It behooves all surgeons doing gastric surgery to be well acquainted with the technic of total gastrectomy as approximately one out of seven resections carried out for malignant disease of the stomach requires a total gastrectomy.*—J. M. W.)

TRANSTHORACIC VAGOTOMY.

K. S. Grimson, G. J. Baylin, H. M. Taylor, F. H. Hesser and R. W. Rundles, Duke University School of Medicine, Durham, N. C. J. A. M. A. 134:925-32, July 12, 1947.

Results obtained by treatment of 57 patients with frequently recurring or refractory peptic ulcers by transthoracic vagotomy alone or combined with gastro-enterostomy are presented and discussed. A left thoracotomy incision was used and the two main trunks of the vagus nerves resected with the branches lying along the lower third of the esophagus. A transverse abdominal incision was used when a gastro-enterostomy was done. Healing or quiescence of symptoms was obtained in all but 1 of these patients.

Certain disadvantages of the operation are summarized. Adequate visualization of the abdominal viscera is not afforded by the transthoracic approach so that it must be supplemented by an exploratory laparotomy unless there is a definite diagnosis of ulcer with malignancy unlikely. Pyloric obstructions with gastric retention and dilatation may result from scar tissue or inflammation, or it may be caused by a poorly functioning sphincter at the stomach outlet. The tone of the sphincter may be abnormal postoperatively so that the feeble peristaltic waves after vagotomy do not imitate the normal ejection cycle. This physiologic obstruction caused a secondary operation in 1 patient and retention in 4 patients treated by vagotomy for other conditions. Adequate gastro-enterostomy relieves both obstruction and retention and is now done for many patients at the time of the vagotomy. A severe diarrhea may follow vagotomy but was only persistent in 4 patients in this series. Temporary difficulty in swallowing occurred soon after operation in 20 of these patients but there was no achalasia.

No adequate explanation has been found as to why subdiaphragmatic vagotomy should relieve or heal peptic ulcer. Reduction of acidity may promote healing and retention of stomach contents aid the neutralization of digestive juices. Fluoroscopic examination shows that the gastric contents are not strongly forced over the ulcer area. Healing probably occurs as a result of combined circumstances. The ulcer healed in 12 patients after transthoracic vagotomy combined with gastro-enterostomy. Retention is less serious than ulcer symptoms so that vagotomy may be indicated as standard treatment but definite conclusions are unwarranted until the complications are more fully investigated and results observed for a longer time. 9 references. 3 tables.

(*Because of the advisability of verifying the pathology present before carrying out any vagotomy and also because of the frequent necessity for establishing some type of gastro-enterostomy, if one is not already present, it would seem that the more logical approach is transabdominally.*—J.M.W.)

GASTRIC NEURECTOMY FOR GASTRIC AND DUODENAL ULCERATION. AN ANATOMIC AND CLINICAL STUDY.

Waltman Walters, H. A. Neibling, W. F. Bradley, J. T. Small and J. W. Wilson, Mayo Clinic, Rochester, Minn. Ann. Surg. 126:1-18, July 1947.

Data on 66 patients on whom gastric neurectomy (vagotomy) had been performed prior to November 1946, and the anatomic findings in 100 routine cases at necropsy are included in this report.

A study of the anatomy of gastric nerves has demonstrated that in 92 per cent of the cases the nerves pass through the diaphragm as two distinct trunks and are readily accessible for resection below the diaphragm.

The abdominal approach to the gastric nerves allows observation of the abdominal contents and especially the ulcer, removal of the ulcer if it is a gastric ulcer and suspected of being malignant, or a drainage operation of the stomach if it is a duodenal ulcer and obstructive or likely to become obstructive.

The immediate results of vagotomy were relief of pain, reduction in gastric secretion and acidity, and relief of gastrospasm in most of the cases. Postoperative disturbances of gastro-intestinal motility were marked in about a fourth of the cases. A definite recurrence of ulceration in 1 case necessitated later resection of the stomach, and in 1 case a clinically unsuspected perforation of a duodenal ulcer occurred postoperatively.

Vagotomy is considered to have only limited application in nonobstructive duodenal ulcer. When the duodenal ulcer is obstructive, an associated gastro-enterostomy or partial gastrectomy is necessary in addition. It has no place in the treatment of gastric ulcers accessible to removal. It may be of greater value for gastrojejunal ulcer especially after partial gastrectomy. In any case, sufficient time must be allowed to elapse to ascertain whether the good results are temporary as they were shown to be in experimental studies on animals by Vanzant or whether further untoward results may occur. 12 references. 9 tables.

(*This is a very logical and conservative approach to the question of vagotomy for duodenal and jejunal ulceration.*—J. M. W.)

CHEMICAL, PHYSIOLOGICAL, AND PATHOLOGICAL OBSERVATIONS ON THE ROLE OF PEPSIN AND HYDROCHLORIC ACID IN THE PRODUCTION OF EXPERIMENTAL ULCERS.

Harry H. LeVeen, University of Chicago, Chicago, Ill. Gastroenterology 8:648-61, May 1947.

Peptic ulcerations produced by irrigating the small intestines of dogs with various acid pepsin solutions under different conditions are examined in the light of biochemical principles. Observations were made in 10 dogs. The change in *p*H from 2.28 to 1.57, a change of approximately 0.7 *p*H unit produced a tremendous increase in ulcerating power, while the change

from 1.57 to 0.96, a change of approximately 0.6 *p*H unit, produced but slight increases in the severity of the ulceration. The increasing ulcerating power produced by increasing acidity tended to reach a plateau and level off somewhere in the region of *p*H 1. With the more acid solutions, increasing numbers of petechial hemorrhages are seen. Microscopic examination revealed that the hemorrhage producing effect is independent of the ulcerating effect. One of the most striking changes was the increase of mucous secretion which occurred as the acidity of the irrigation solution increased. This enhancement of mucous secretion with increasing acidity occurs even when the irrigation solution is pepsin free. Ulcerating action cannot be attributed to either peptic power or acid since both vary in the same direction simultaneously. In order to settle the question as to which is the destructive force, an exclusive experiment was devised wherein each factor varied conversely. It was thereby shown that the ulcerating effect of acid is dependent upon its enhancement of pepsin action rather than injury by acid. The fact that mucus played a role in protecting the mucosa was evident in all experiments. A constant flowing stream rather than a drop was necessary to wash away this mucus in order that ulcers be produced with any degree of rapidity. The mucous film acting as a mechanical barrier might prevent free circulation of the pepsin hydrochloric acid solution over the mucosal surface. After a brief period the pepsin solution penetrating this barrier would be relatively inactive, since digestion forms peptones which inhibit the reaction. Spasm of the muscular wall reduces the surface area exposed to the digestive solutions and relatively increases the mucous secretion per unit area and so tends to protect the bowel from ulceration. Spasm of the mucularis mucosa shortens the villi. Acid alone can produce spasm. While it produces enhanced mucous secretion, acid produces no morphologic evidence of cellular injury. Increased mucous secretion indicates that this cell function is unimpaired. 26 references. 7 figures.

(*A carefully conceived and executed problem which adds to our fundamental knowledge of the production of peptic ulcer.*—M.W.

References to Current Articles

Transabdominal Gastric Vagotomy. A Study of the Anatomy and Surgery of the Vagus Nerves at the Lower Portion of the Esophagus. Lewis H. Dragstedt, Harry J. Fournier, Edward R. Woodward, E. Bruce Tovee and Paul W. Harper, Jr., University of Chicago School of Medicine and University of Illinois College of Medicine, Chicago, Ill. Surg., Gynec. & Obst. 85:461-66, October 1947. Discusses anatomic studies on the cadaver and on surgical specimens in correlation with observations made at the operating table in 170 cases in which gastric vagotomy was done, by the transabdominal route in 109 cases. The technic of the operation is described. 7 references. 10 figures.

Choice of Drugs in the Treatment of Duodenal Ulcer. A. H. Douthwaite, Guy's Hospital, London, England. Brit. M. J. 4514:43-47, July 12, 1947. Discusses various drugs employed in the treatment of duodenal ulcer with special attention to the correct method of administering

belladonna and its value. Considers the operation of vagotomy "unjustifiable." 18 references. 8 figures.

The Early Diagnosis of Cancer of the Oesophagus and Stomach. Heneage Ogilvie, Guy's Hospital, London, England. Brit. M. J. 4523:405-407, Sept. 13, 1947.

Sudden Death from Perforated Gastric Ulcer. S. Silverman, Leeds, England. Lancet 2:245, Aug. 16, 1947. 8 references.

Report of Surgery of the Stomach and Duodenum for 1946. Waltman Walters, Virgil S. Counseller, John M. Waugh and O. Theron Clagett. Proc. Staff Meet., Mayo Clin. 22:345-49, Aug. 20, 1947.

Multiple Simultaneous Carcinomas of the Stomach Treated by Total Gastrectomy. Report of a Case. Claude F. Dixon and Robert E. Weismann, Mayo Clinic, Rochester, Minn. S. Clin. North America 27:919-25, August 1947.

Vagotomy for Peptic Ulcer. Vernon C. Thompson, The London Hospital, and A. H. James, St. Mary's Hospital, London, England. Lancet 2: 44-47, July 12, 1947.

The Effect of Large Doses of Irradiation on Gastric Acidity. Irving B. Brick, Boston City Hospital, Boston, Mass. New England J. Med. 237:48-51, July 10, 1947.

Total Gastrectomy with Particular Reference to Closed (Aseptic) Esophagojejunostomy. Reginald H. Smithwick, Boston University School of Medicine, Boston, Mass. New England J. Med. 237:39-48, July 10, 1947.

Gastric Operations. Robert M. Zollinger and Stanley O. Hoerr, Peter Bent Brigham Hospital, Boston, Mass. J. A. M. A. 134:575-79, June 14, 1947.

A Study of Certain Problems Resulting from Vagotomy in Dogs with Special Reference to Emesis. Kao Hwang, Hiram E. Essex and F. C. Mann, Mayo Foundation, Rochester, Minn. Am. J. Physiol. 149:429-48, May 1947.

Experimental Production of Ulcers in Closed Gastric Pouches in Dogs. I. F. Stein, Jr., M. I. Grossmand and A. C. Ivy, Northwestern University Medical School, Chicago, Ill. Surgery 22:552-57, September 1947.

Lysozyme Content of the Stomach and Its Possible Relationship to Peptic Ulcer. Karl Meyer, John F. Prudden, William L. Lehman and Anita Steinberg, College of Physicians and Surgeons, Columbia University, and the Presbyterian Hospital, New York, N. Y. Proc. Soc. Exper. Biol. & Med. 65:220-21, June 1947.

A Rational Approach to the Surgery of High Gastric Ulcer. Ralph Colp and Leonard J. Druckerman, Columbia University, and Mount Sinai Hospital, New York, N. Y. S. Clin. North America 27:231-40, April 1947.

Bleeding as a Late Sequel of Subtotal Gastrectomy of the Billroth II Type for Duodenal Ulcer. Sigmund Mage, Beekman-Downtown Hospital, Mt. Sinai Hospital, New York, N. Y. S. Clin. North America 27:241-47, April 1947.

Supradiaphragmatic Vagotomy in Gastrojejunal Ulceration Following Subtotal Gastrectomy for Duodenal Ulcer. Vernon A. Weinsten and Ralph Colp, Mount Sinai Hospital, Sydenham Hospital, Columbia University, New York, N. Y. S. Clin North America 27:249-53, April 1947.

The Significance of the Gastric Acidity in the Surgical Therapy of Peptic Ulcer. Asher Winkelstein, Mount Sinai Hospital, and Columbia University, New York, N. Y. S. Clin. North America 27:255-60, April 1947.

Transthoracic Gastrectomy. L. F. Martinson, S. R. Gillespie and Arthur Hunter, Portland, Ore. Northwest Med. 46:685-89, September 1947.

Hour Glass Stomach. Eric R. Sanderson and Glen S. Player, Seattle, Wash. Northwest Med. 46:689-97, September 1947.

The Motor and Secretory Function of the Stomach After Operation (*Motornaya i sekretornaya funktsiya operirovannogo zheludka*). P. I. Sapozhnikov and K. I. Shirokova, The First Lenin Medical Institute of Moscow, U.S.S.R. Khirurgiya No. 5, 68-84, 1947.

Anesthesia for Gastric Surgery. Morris Bien, Mount Sinai Hospital, New York, N. Y. S. Clin. North America 27:261-64, April 1947.

Are Gastric Ulcer and Duodenal Ulcer Different Diseases? Franklin Hollander, Mount Sinai Hospital, Columbia University, New York, N. Y. S. Clin. North America 27:265-71, April 1947.

The Roentgen Differentiation of Benign and Malignant Ulcers. Marcy L. Sussman and Joan J. Lipsay, Columbia University, Mount Sinai Hospital, New York, N. Y. S. Clin. North America 27:273-87, April 1947.

Malignant Degeneration of Chronic Benign Gastric Ulcer. Samuel H. Klein, Mount Sinai Hospital, New York, N. Y. S. Clin. North America 27: 289-98, April 1947.

Coexisting Ulcer and Cancer of the Stomach. Harry Yarnis, Mount Sinai Hospital, Columbia University and Montefiore Hospital, New York, N. Y. S. Clin. North America 27:299-307, April 1947.

Peptic Ulcer as a Psychosomatic Disease. Burrill B. Crohen, Columbia University and Mount Sinai Hospital, New York, N. Y. S. Clin. North America 27:309-14, April 1947.

Gastrojejunocolic Fistula. Percy Klingenstein, Mount Sinai Hospital, Beth Israel Hospital, New York, N. Y. S. Clin. North America 27:315-31, April 1947.

Vagotomy For Peptic Ulcer. Experimental and Clinical Studies. Henry N. Harkins and Donald H. Hooker, Baltimore, Md. Surgery 22:239-46, August 1947.

Experiences with Vagectomy for Peptic Ulcer. With Report of an Unsuccessful Case. Richard Warren, West Roxbury, Mass. Surgery 22:246-59, August 1947.

Rigid Antral Gastritis as Precancerous Condition of the Stomach (*Rigidnye antral'nye gastrity kak predrakovoe zabolevanie zheludka*). A. N. Rykhikh and Ya. N. Sokolov, Moscow, U.S.S.R. Khirurgiya No. 4, 34-48, 1947.

Resection of a Tubercular Stomach (*Sluchaĭ resestii zheludka pri tuberkuleze ego*). M. D. Patsiora, The Central Lenin Institute of Blood Transfusions, U.S.S.R. Khirurgiya No. 3, 82-83, 1947.

Acute Phlegmonous Gastritis. P. C. Guzzetta, Jr. (Comdr., M.C., U.S.N.R.) and H. W. Southwick (Lt. (J.G.) M.C., U.S.N.R.). Surgery 22:453-57, September 1947.

Gastric Acidity in Normal Individuals and Those with Uncomplicated Duodenal Ulcer. An Attempt to Influence the Nocturnal Secretion. Walter L. Voegtlin, Seattle, Wash. Gastroenterology 9:125-40, August 1947.

The Secretion of Gastric Mucin Following an Alcohol Meal. Studies on Normal Subjects and On Patients with Peptic Ulcer. Maurice Tulin, Jeanette Gutmann and Thomas P. Almy, New York Hospital, New York N. Y. Gastroenterology 9:191-97, August 1947.

Irradiation of Gastric Cancer. G. Granston Fairchild and Alan Shorter, Mount Vernon Hospital, Northwood, England. Brit. M. J. 4519:243-47, Aug. 16, 1947.

Peptic Ulceration in Identical Twins. A. G. Freeman. Brit. M. J. 4508:765 May 31, 1947.

Intravenous Atropine for Peptic Ulcer. Anastase Landau, Paderewski Polish Hospital, Edinburgh, Scotland. Brit. M. J. 4512:928, June 28, 1947.

Acute Dilatation of the Stomach. B. Markowski, Polish Navy. Brit. M. J. 4516:128-30, July 26, 1947.

Gastrectomy. A Human Experiment. Heneage Ogilvie, Guy's Hospital, London, England. Lancet 2:377-79, Sept. 13, 1947.

Hepatic Dysfunction in Peptic Ulcer. H. Pollack and C. E. Inman, Central Middlesex County Hospital, Middlesex, England. Lancet 2:131-34, July 26, 1947.

Vagal Resection of Peptic Ulcer. Editorial. Lancet 2:95-98, July 19, 1947.

Vagal Resection in the Treatment of Duodenal Ulcer. I. M. Orr and H. D. Johnson, British Postgraduate Medical School, London, England. Lancet 2:84-88, July 19, 1947.

Plasma Clot Graft of Peritoneum for Perforations of Stomach. Preliminary Report of an Experimental Study. Joseph Bloom, New York Medical College, Flower and Fifth Avenue Hospitals, New York, N. Y. Surg., Gynec. & Obst., 85:155-60, August 1947.

Gastric Nuerectomy for Gastric Duoduenal Ulceration. Waltman Walters, William F. Bradley, Harold A. Neibling, John T. Small and James W. Wilson, Mayo Clinic, Rochester, Minn. Ann. Surg. 126:1-18, July 1947.

Operations on the Vagus Nerves in the Treatment of Peptic Ulcer. Conrad R. Lam. Am. J. Surg. 74:115-16, August 1947.

Some Physiologic Aspects of the Surgical Treatment of Duodenal Ulcer. James T. Priestly, Mayo Clinic, Rochester, Minn. S. Clin. N. America 27:905-18, August 1947.

Favorable and Unfavorable Results of Gastric Neurectomy (Vagotomy) for Peptic Ulcer. An Anatomic Physiologic and Clinical Study. Waltman Walters, Harold A. Neibling, William F. Bradley, John T. Small and James W. Wilson, Mayo Clinic, Rochester, Minn. S. Clin. North America 27:885-904, August 1947.

Perforated Peptic Ulcer. Short-Term Variations in Frequency. R. A. Jamieson, University of Glasgow, Glasgow, Scotland. Brit. M. J. 4520:289-91, Aug. 23, 1947.

Carcinoma of the Stomach. Rate of Operability. Samuel F. Marshall and Mark L. Welch, Lahey Clinic, Boston, Mass. S. Clin. North America 27:631-35, June 1947.

Primary Lymphosarcoma of the Stomach. Statistical Summary and Case Report of A Five-Year Cure. John B. O'Donoghue and Maurice B. Jacobs, Chicago, Ill. Am. J. Surg. 74:174-79, August 1947.

The Problem of Gastric Cancer. Owen H. Wangensteen, Minneapolis, Minn. J. A. M. A. 134:1161-69, Aug. 2, 1947.

Anastomotic Ulcer 12 Months After Somervell Operation. Harold Dodd, King George Hospital, Ilford, Royal Hospital Richmond, Princess Louise Hospital, Kensington, and London Homeopathic Hospital, London, England. Brit. M. J. 4517:170-71, Aug. 2, 1947.

Supradiaphragmatic Section of the Vagus Nerves to the Stomach in Gastrojejunal Ulcer. Lester R. Dragstedt, James S. Clarke, Paul V. Harper, Jr., Edward R. Woodward and E. Bruce Tovee, University of Chicago, Chicago, Ill. J. Thoracic Surg. 16:226-36, June 1947.

Congenital Hypertrophic Pyloric Stenosis. Cleon A. Nafe, Indianapolis, Ind. Arch. Surg. 54:555-65, May 1947.

Surgical Treatment of Peptic Ulcer. Recent Experience at Los Angeles General Hospital. Harold Lincoln Thompson and Harry Prout, Los Angeles General Hospital, Los Angeles, Calif. Arch. Surg. 54:390-413, April 1947.

Gastroscopy and Lymphoma of the Stomach. R. John F. Renshaw and Francis M. Spencer, Cleveland Clinic, Cleveland, Ohio. Gastroenterology 9: 1-5, July 1947.

Tertiary Gastric Syphilis. William A. Knight and Abraham Falk, University of Minnesota and Veterans Administration Hospital, Minneapolis, Minn. Gastroenterology 9:17-27, July 1947.

The Nutritional State of Patients with Peptic Ulcer as Measured by Vitamin Levels in the Blood and Urine. David Cayer and Sophia Cody, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C. Gastroenterology 9:54-63, July 1947.

The Late Restoration of Gastric Acidity after Thoracic Vagotomy in the Dog. Frances R. Vanzant, Houston, Tex. Gastroenterology 8:768-73, June 1947.

An Assay Method For Anti-Ulcer Substances. Frances Pauls, Arne N. Wick and Eaton M. MacKay, The Scripps Metabolic Clinic, La Jolla, Calif. Gastroenterology 8:774-82, June 1947.

A Method for Determining the Effect of Various Agents on Gastric Evacuation in Man. J. G. Annegers and A. C. Ivy, Northwestern University Medical School, Chicago, Ill. Gastroenterology 8:711-16, June 1947.

The Chronic Gastritis Problem. "Functional" Upper Gastro-Intestinal Disease In Military Personnel and the Value of Establishing an Organic Basis for Diagnosis and Treatment. Eddy D. Palmer, Walter Reed General Hospital, Washington, D. C. Gastroenterology 8:743-53, June 1947.

Plasma Vitamin C Levels in Patients with Peptic Ulcer. Response to Oral Load Test of Ascorbic Acid. Victor M. Crescenzo and David Cayer, North Carolina Baptist Hospital, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C. Gastroenterology 8: 754-61, June 1947.

30. Small Intestines

BENIGN AND MALIGNANT TUMORS OF THE SMALL INTESTINE.

Thomas W. Botsford and Roy E. Seibel, Boston, Mass. New England J. Med. 236:683-94, May 8, 1947.

Primary cancer of the small intestine occurs in one-tenth of 1 per cent of all cases in which autopsies are performed and is thirty-six times less frequent than malignant tumors of the colon; however, 60 per cent of intestinal sarcomas are located in the small bowel. The majority of small-bowel tumors that cause symptoms are malignant and about a third of these are seen in patients under 50 years of age.

Adenocarcinoma is the usual type encountered. Metastases to the regional lymph nodes occur early. Lymphosarcoma, which originates in the lymphoid tissue of the bowel wall, generally occurs in the ileum, and the mesenteric lymph nodes are involved early. Most of these tumors are seen in the fourth decade of life. Argentaffinoma, or carcinoids, arise from the Kultschitzky cells in the depths of the mucosal glands. They are characteristically located in the appendix, terminal ileum, and occasionally in the stomach, jejunum and cecum. They are regarded as benign tumors but may become malignant, with local invasion and distant metastastes.

Lipomas and adenomas of the small intestine are small pedunculated benign tumors, located in the submucosa, which may initiate an intussusception. Leiomyomas and fibromas are benign tumors often encountered as incidental findings.

The symptoms due to these lesions, however, are those either of obstruction or of bleeding into the alimentary canal with the development of secondary anemia. The accurate early diagnosis ultimately depends on careful roentgenologic barium-contrast studies. The demonstration of intussusception is the most frequent roentgen ray finding in benign tumors of the small intestine. The usual roentgen ray finding in carcinoma of the small intestine, is an annular constriction with concave, shelf-like margins. The malignant variety of argentaffinoma may cause an annular constriction with

a roentgen ray appearance indistinguishable from an annular carcinoma. Small benign nodular submucosal carcinoids should show smooth dome-shaped or polypoid filling defects projecting into the lumen, frequently multiple. Lymphosarcoma tends to involve a longer segment of intestine than carcinoma and less often causes constriction.

The treatment of choice is resection of the involved segment of bowel along with its adjacent mesentery and restoration of the continuity of the intestine. Roentgenotherapy was given postoperatively to all patients with lymphosarcoma.

The survival period for the patients with malignant tumors of the jejunum and ileum was universally short. 29 references. 3 tables. 7 figures.

References to Current Articles

Meckel's Diverticulum. Report of Two Unusual Cases. William R. Moses, Gallinger Municipal Hospital, Washington, D. C. New England J. Med. 237:118-22, July 24, 1947.

Ulcus Simplex Jejuni. A. Höyer, The Ulleval Hospital, Sweden. Acta chir. Scandinav. 94:550-56, No. 6, 1946. Man, 26; simple perforated ulcer located 50 cm. below the duodeno-jejunal flexure, on the free border of the intestine. This favored excision and suturing, since the mesenteric surface of the intestine was not affected. Transverse suture to the long axis of the intestine. Complete recovery. This method was used by the author also in many incarcerated gangrenous hernias of the intestine. 22 references. 2 figures.

Proximal Extension and Progression Following Operations for Regional Ileitis. Ralph Colp, Columbia University, Mount Sinai Hospital, New York, N. Y. S. Clin. North America 27:333-36, April 1947.

Early Postoperative Motor Response of the Small Intestine to Jejunal Feedings. Stephan Rosenak, and Franklin Hollander, Mount Sinai Hospital, New York, N. Y. S. Clin. North America 27:345-54, April 1947.

Perforation of Jejunum Due to Minor and Obscure Trauma, With Postoperative Escherichia Coli Peritonitis and Wound Infection Treated With Sulfathiazole and Streptomycin. J. D. Mortensen, Veterans Administration, Roseburg, Ore. Northwest Med. 46:523-29, July 1947.

Tumors of the Small Intestine. Richard B. Cattell and Bentley P. Colcock, Lahey Clinic, Boston, Mass. S. Clin. North America 27:644-50, June 1947.

A Contribution to the Knowledge of Primary True Concrements in the Small Bowel. Sten Grettve, University of Upsala, Upsala, Sweden. Acta chir. Scandinav. 95:387-410, Fasc. 5, 1947.

Chemical Investigation of the Enterolith in Grettve's Case and a Report of a Further Case of a Primary Calculus of the Small Intestine. Gunnar Blix, Institute of Medical Chemistry, Upsala, Sweden. Acta chir. Scandinav. 95:411-13, Fasc. 5, 1947.

Regional Ileitis. William J. Fusaro, Norwegian Hospital, Brooklyn, N. Y. Am. J. Surg. 73:720-24, June 1947.

Intestinal Lipodystrophy (Whipple's Disease). Preliminary Report of Three Cases in an Early State of the Disease. J. deJ. Pemberton, Mandred W. Comfort, Edwin Fair and Jerry Zaslow, Mayo Clinic and Mayo Foundation, Rochester, Minn. Surg., Gynec. & Obst. 85:85-91, July 1947.

31. Appendix

References to Current Articles

Appendicitis Complicating Pregnancy, Labor and the Puerperium. Richard L. Meiling, Western Reserve University School of Medicine, Cleveland, Ohio. Surg., Gynec. & Obst. 35:512-22, October 1947. Tabulates 26 cases of appendicitis complicating pregnancy, labor and the puerperium at the University Hospitals of Cleveland; and compares the incidence of appendicitis in relation to other abdominal complications of pregnancy, showing it to be of rare occurrence. Discusses diagnosis and treatment. 50 references. 4 tables.

Surgical Approach in Acute Appendicitis (*K voprosu operativnoi taktiki pri ostrom appenditsite*). M. I. Kotova, The First Lenin Medical Institute of Moscow, U.S.S.R. Khirurgiya No. 5, 84-88, 1947. 3 tables.

Factors in the Reduction of Mortality in Acute Appendicitis. Stanley O. Hoerr, Boston, Mass. Surgery 22:402-407, August 1947.

The Effect of Streptomycin in "Closed-Loop" Appendicitis. An Experimental Study. Jack M. Farris, Los Angeles, Calif., and Howard H. Romack, Cambridge, N. Y. Surgery 22:305-11, August 1947.

Mucocele and Myxoglobulosis of the Appendix. David Miller, Mount Sinai Hospital, Beekman Hospital, New York, N. Y. S. Clin. North America 27:337-43, April 1947.

Nondrainage and Early Ambulation in Cases of Perforative Appendicitis. Arnold S. Jackson, Jackson Clinic, Madison, Wis. Arch. Surg. 54: 644-55, June 1947.

A Swallowed Pin Retained in the Appendix. J. Scholefield, West Middlesex County Hospital, Middlesex, England. Lancet 2:92, July 19, 1947.

A Psychiatric Study of Sixty-One Appendectomy Cases. Smiley Blanton and Virginia Kirk, Vanderbilt University, School of Medicine, Nashville, Tenn. Ann. Surg. 126:305-14, September 1947.

Unusual Findings in the Ileocecal, Appendiceal Region. R. Robert De Nicola, Kadlec Hospital, Richland, Wash. Northwest Med. 46:519-23, July 1947.

32. Colon and Rectum

MANAGEMENT OF CANCER OF THE COLON.

Paul I. Hoxsworth and James Mithoefer, University of Cincinnati College of Medicine and Cincinnati General Hospital, Cincinnati, Ohio. Surgery 22:271-85, August 1947.

There is general agreement upon the amount of intestine and mesentery to be removed in operations for the cure of cancer of the colon but two methods are employed for resection of the intestine and restoring continuity afterwards. These are: (1) delayed; (2) immediate anastomosis. Development of these operations is reviewed. Resection with immediate anastomosis is preferable but requires careful attention to details before, during and after operation for success. Exteriorization and delayed anastomosis should be done if suitable conditions for the immediate operation cannot be provided The management of this condition at the Cincinnati General Hospital is described in detail and operative results reported.

Any acute or chronic intestinal obstruction below the hepatic flexure is relieved by preliminary proximal cecostomy or colostomy to prevent distended and thin or edematous thickened intestinal walls or secondary systemic changes in chemistry, nutrition and hydration, all of which tend to prevent safe anastomosis. Tangenital cecostomy is preferable with simple obstruction because it is easily done, provides satisfactory decompression and usually closes spontaneously but operative closure is comparatively easy if necessary. The existence of local inflammation requires diversion of intestinal contents as well as decompression. This is accomplished by a modified Devine colostomy on the right or left half of the transverse colon. Secondary obstruction is rarely found with lesions of the ascending colon or cecum. Obstruction here indicates nonresectability when present but may be relieved by the Miller-Abbott tube or continuous gastric suction with numerous small enemas. Decompression is provided by an ileotransverse colostomy through a short transverse incision. A simple antiperistaltic side to side anastomosis has given satisfactory results. The ileum may be divided and the end inverted before the anastomosis is done if justified by the condition of the patient and intestine. Resection and immediate anastomosis without decompression is done if there is no obstruction.

Preoperative treatment consists of sufficient whole blood transfusion for the anemia and a low residue diet with high carbohydrates, proteins and calories. Intravenous administrations of amino acids, glucose and saline are given if the oral intake is inadequate. Daily vitamin requirements must be filled. The intestine must be cleaned out as well as possible because collections of gas, feces and barium prevent technical accuracy and increase the likelihood of peritonitis. A tap water or saline cleansing enema is given daily by rectum and through the colostomy. Oral succinylsulfathiazole is given every six hours in doses equivalent to 0.25 Gm. per kilogram of body weight every twenty-four hours. A roentgenographic examination is made the day before operation to detect gas, feces or barium in the colon

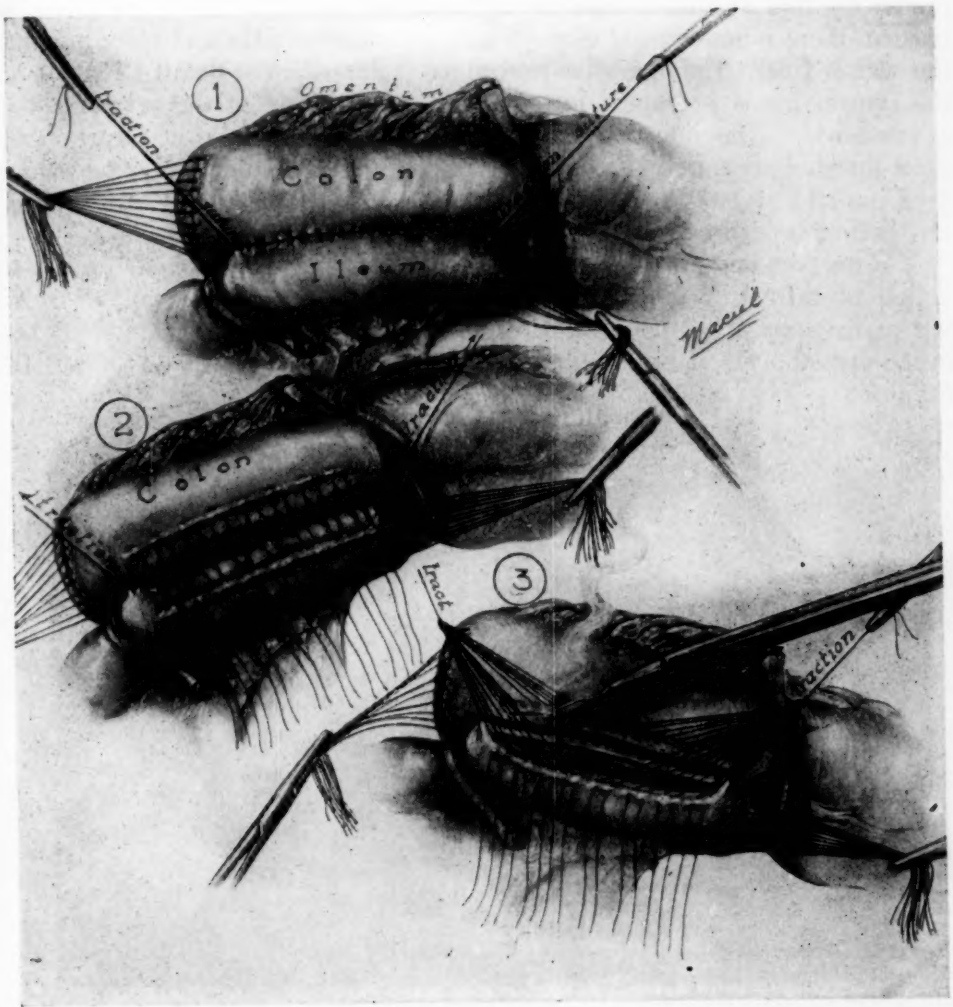

Fig. 1—Steps in side-to-side ileocolostomy. (1) Posterior continuous sutures of silk between two traction sutures; (2) anterior row of Halsted mattress sutures placed; (3) mattress sutures pulled aside, incisions made in bowel and vessels clamped and tied with catgut or coagulated. (From S. Clin. North America 25:1201, 1946).

By Courtesy of Surgery.

and liquid diet is commenced. Continuous gastric suction is started the morning of the operation. The skin is prepared by shaving and washing with gauze saturated with 1:100 aqueous solution of cephrn chloride. A transverse incision which frequently extends into the flanks is used for all colonic lesions unless they are low in the sigmoid. Better exposure is obtained by this approach than by the vertical incision. Less retraction is needed, there is less wound disruption, postoperative pain and splinting and the scar is finer. The operative procedure is described in detail. Tension at the suture line is prevented by adequate mobilization of the segments for anastomosis. The intestine must be carefully prepared for sutures and these inserted accurately. Excessive inversion must be avoided. The operative area must be isolated and completely cleared of contaminated instruments, etc. before reperitonealization and wound closure is commenced.

Resection and immediate anastomosis was performed on 87 patients with a mortality of 6.9 per cent. The average stay in hospital for the surviving patients was twenty-six days after resection. The average interval between cecostomy and resection was fifteen days. 27 references. 4 tables. 6 figures.

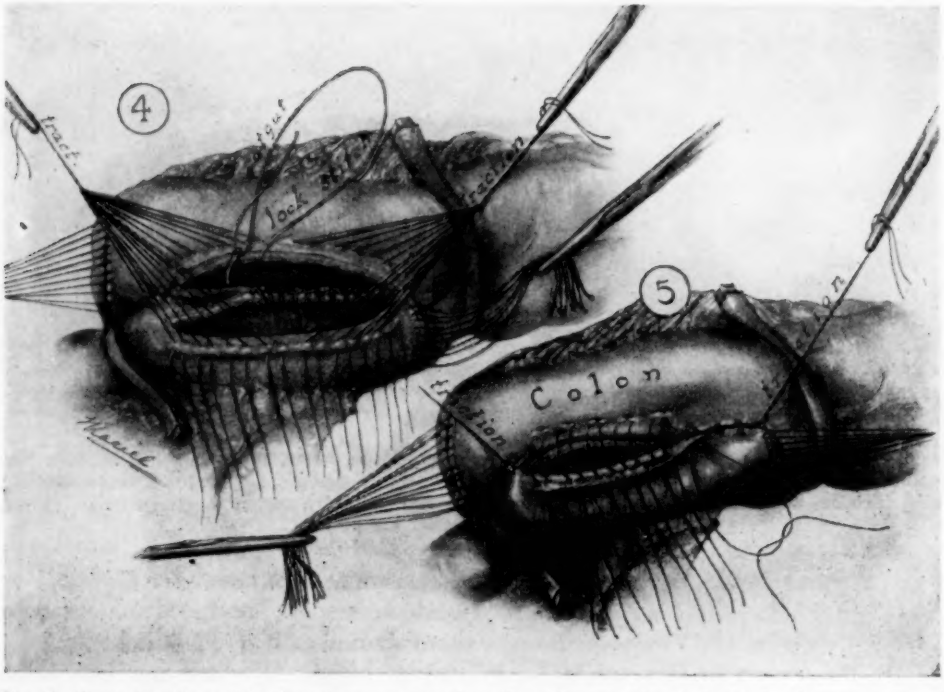

Fig. 2—Steps in side-to-side ileocolostomy (continued). (4) posterior lock stitch of catgut through all layers of bowel; (5) mattress sutures pulled up and tied. (From S. Clin. North America 25:1202, 1946).

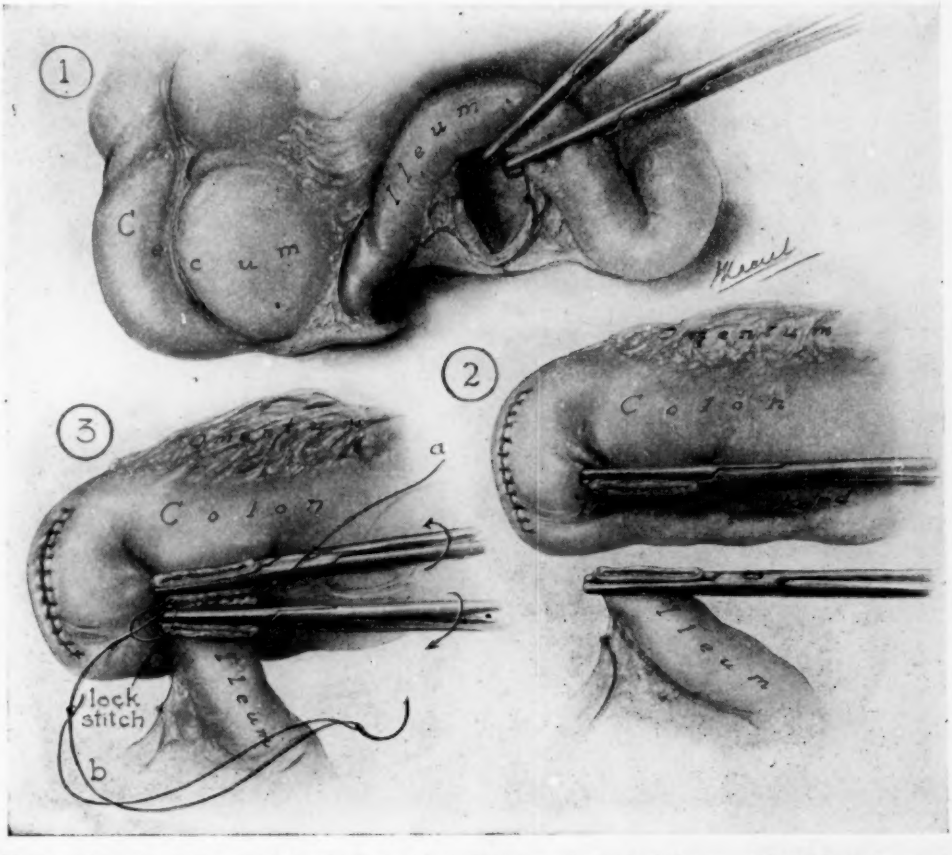

Fig. 3—Steps in end-to-end ileocolostomy. (1) Division of terminal ileum; (2) Kocher clamp on side of colon; (3) posterior continuous suture of catgut. (From S. Clin. North America 25:1203, 1946).

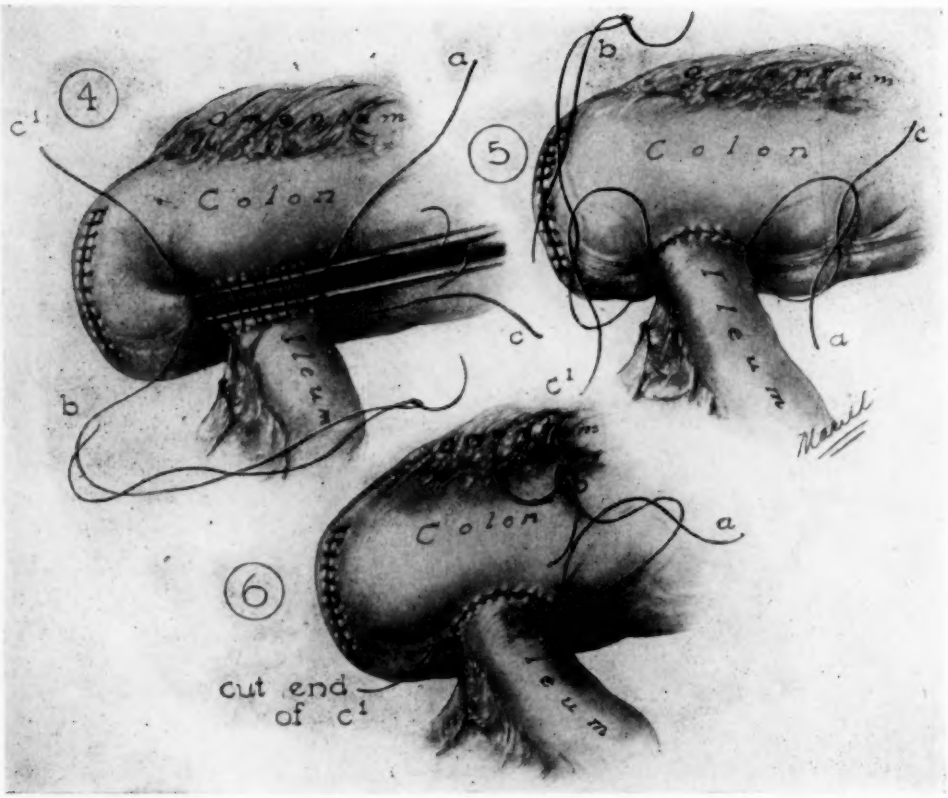

Fig. 4—Steps in end-to-side ileocolostomy (continued). (4) Anterior right angle (Cushing) suture of catgut over clamps; (5) anterior suture pulled up after clamps are removed; (6) posterior suture continued as second anterior layer. (From S. Clin. North America 25:1204, 1946).

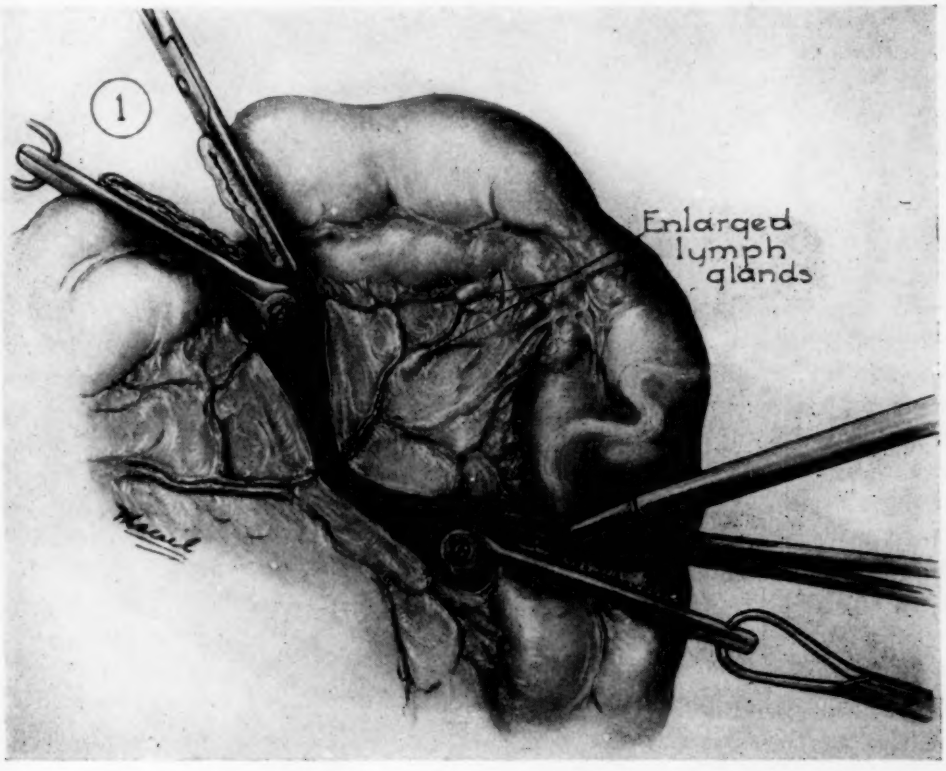

Fig. 5—Steps in end-to-end aseptic intestinal anastomosis. (1) Division of bowel with cautery between Kocher and Stone clamps. (From S. Clin. North America 25:1205, 1946).

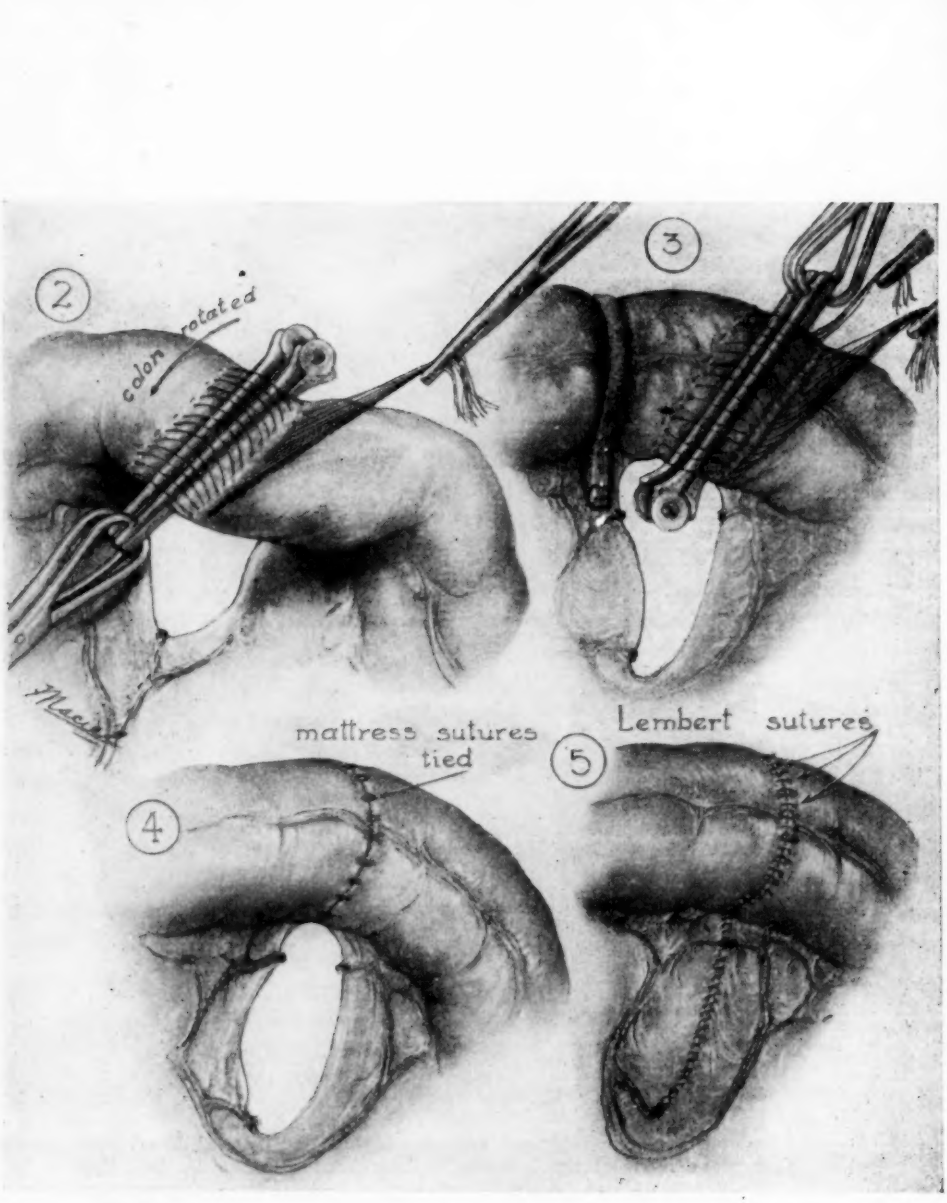

Fig. 6—Steps in end-to-end aseptic anastomosis (continued). (2) Clamps rotated and first row of Halsted mattress sutures of silk placed; (3) first row of sutures tied and opposite row of mattress sutures placed; (4) Stone clamps removed and second row of mattress sutures tied; (5) Completed anastomosis. (From S. Clin. North America 25:1946).

FAMILIAL POLYPOSIS OF THE COLON. TWO FAMILIES, FIVE CASES.

Plimpton Guptill, University of Rochester School of Medicine and Dentistry, Rochester, N. Y. Surgery 22:286-304, August 1947.

This is an inherited condition which occurs in families and frequently develops malignant degeneration, usually in the sigmoid and rectum. Members of these families who do not have polyposis are likely to develop localized cancer of the stomach or intestine at a younger age than usual. The exact reason why the colonic epithelium develops this proliferative tendency is unknown but it acts as a mendelian recessive and is transmitted by genes. The incidence of this condition is discussed and 5 illustrative cases in 2 families reported. The first family of 7 people had 4 cases of polypoid disease. One of the remaining 3 members is known to be free by roentgenographic and proctoscopic examination. The 2 others refused examination. There was only 1 case in the other family but that was typical with malignant degeneration in 3 places and gastro-intestinal cancer in 1 parent. The pathology is discussed.

The only conservative treatment is roentgen therapy of the entire colon though this does not seem logical because the adenoma cells should be radiation-resistant. Reports of this treatment are not enthusiastic. Multiple colostomies have been recommended for selected cases but are not considered practicable for a true case of the disease. Ileosigmoidostomy and fulguration of the large intestine from below or through a temporary external sigmoidostomy has been the preferred treatment during the last four years. It is believed that all polyp-bearing mucosa must be excised and any remaining rectum attached to the sphincter must be short enough for direct visual inspection and easy fulguration. Even this small amount of rectum should not be left unless the initial polyps are definitely benign. Recommended treatment then is fulguration of polyps in the lower rectum followed by an ileo-rectal anastomosis, 2-stage colectomy and close observation. A new anastomosis is suggested in order to obtain as total a colectomy as possible with retention of the anal sphincter and normal bowel habits. 24 references. 1 table. 15 figures.

THE IMPORTANCE OF MALIGNANT DEGENERATION AS A COMPLICATION OF CHRONIC ULCERATIVE COLITIS.

Richard B. Cattell and Earl J. Boehme, The Lahey Clinic, Boston, Mass. Gastroenterology 8:695-710, June 1947.

Review of the literature shows only about 15 reported cases of this condition. A series of 9 more cases is presented. The frequency with which this form of colitis predisposes to malignancy is not generally realized. The average age of these patients when the ulcerative colitis began was 27 years. The malignancy became apparent about nine years later but no surgery was performed until about an average of eleven and one-half

years afterwards. Cancer was not suspected in 2 patients of this group but 4 had symptoms indicating carcinoma for six months to two years. Suspicious roentgenograms were made in 2 cases but were unchecked for eleven and thirteen months. Recurrent flare-ups and remissions occurred in 7 patients over eight to nineteen years. A 57 year old woman had severe ulcerative colitis and a known rectal tumor for two years. She might well have been saved by early surgery.

These cases emphasize the urgency of watching for the possible development of malignancy in all cases of ulcerative colitis even though they may have existed for years and an ileostomy done. The incidence of cancer in children is high and ulcerative colitis should also be carefully watched in them. Lesions are often small but careful search should be made for them in cases of extensive polyposis or pseudopolyposis. Frequent periodic inspections of the rectum and colon should be made in all old cases of ulcerative colitis in which colectomy has not been indicated. Periodic barium studies should be made of all cases of ileostomy to eliminate possible cancer not seen by sigmoidoscopy. Periodic sigmoidoscopic and roentgenographic studies should be made of all apparently cured cases of ulcerative colitis because cancer developing in these cases metastasizes early and is extremely malignant. Bloody stools with stricture or obstruction are especially suggestive. Early diagnosis and operation is the only way to improve the present bad results obtained with these cases. Most cases are not resected and rarely live five years. 18 references.

VOLVULUS OF THE CECUM AND ASCENDING COLON.

Edward L. Young, Harvey R. Morrison and Walter E. Wilson, Jr. Faulkner Hospital and Boston School of Medicine, Boston, Mass. New England J. Med. 237:78-86, July 17, 1947.

The etiology, preoperative diagnosis and treatment of this condition is discussed with emphasis upon the roentgenologic findings and surgical treatment. It is rare, statistics showing that it caused 1.15 per cent of 520 cases of acute intestinal obstruction exclusive of strangulated hernias.

A preoperative diagnosis of this condition is not usually made but careful study of the history, physical and roentgen findings should enable the condition to be diagnosed more frequently. About half the patients give a characteristic history of previous attacks of sudden, acute colicky abdominal pains, chiefly in the right lower quadrant, and usually accompanied by nausea and vomiting. The roentgenologic findings are important, the principal points being a dilated cecum with varying dilatations of the terminal ileum and ascending colon. The cecum is not seen in its normal position but is dilated and occupies an abnormal position in the left upper quadrant in about 90 per cent of cases. Examination by barium enema shows the dilated large intestine to be above the place where the barium column is blocked. This examination also shows the mucosal twisting and torsion at the point where the barium is stopped, a condition characteristic of vol-

vulus. The differential diagnosis from obstructing tumors is made by the characteristic twisted mucosal pattern which is not seen in tumor. The dilated gas-filled cecum in the left upper quadrant shows a high fluid level in films taken in the erect position and is differentiated from a dilated stomach by intubating the latter or outlining it by a swallow of barium followed by fluoroscopic or roentgen examination which will separate them.

The treatment is entirely surgical, the earlier the better. The objects of surgery are to relieve the obstruction, reduce the volvulus and prevent recurrence. Merely untwisting the volvulus will not suffice. There is no standard procedure, operative details being determined for each case. A Mikulicz resection and exteriorization should be done when condition of the cecum permits. If the intestine is undamaged, cecostomy with cecocolic fixation and plication may be performed. Death from peritonitis may follow return of a distended, thin-walled cecum to the abdominal cavity after cecostomy or from leakage of a primary suture. A series of 7 illustrative cases is reported. 12 references. 1 table. 5 figures.

RECURRENT CANCER OF THE COLON AND RECTUM.

J. E. Dumphy, Peter Bent Brigham Hospital, Boston, Mass. New England J. Med. 237:111-13, July 24, 1947.

A series of 4 cases operated upon for recurrent cancer of the colon and rectum is presented to illustrate the possibilities of surgery in what has been regarded as a hopeless situation. Reoperation should be considered for recurrences as for primary growths, regardless of their size and apparent fixation, if there is no definite indication of distant metastases or generalized seeding of the peritoneum.

The first case was a 36 year old woman who had a recurrence involving the sigmoid, mesentery, retroperitoneal tissue and left adnexa. The tumor was resected and a permanent colostomy performed, the rectal stump being closed below the peritoneum. She returned to the hospital about four and a half years later for repair of a ventral hernia. There were no symptoms of cancer but a nodule about the size of a hen egg was found by the ureter and considered scar tissue. She had an acute intestinal obstruction a year later and died. Autopsy showed a rather large adenocarcinoma. This was an arrested case for five years and might have been permanently cured had the surgery been a little more radical. The second recurrence was so small over four years later that it was not recognized as a tumor. The second case had a recurrence two and a half years after a right colectomy for cancer. The recurrence involved the abdominal wall and round ligament of the liver. The entire mass was excised. No enlarged lymph nodes were found. The patient was alive and well six and half years later. The third case was a 52 year old man who had a recurrence two years after removal of a carcinoma from the left lower abdomen. A tumor involving the sigmoid, mesentery, bladder, left ureter and retroperitoneal tissues was removed with

difficulty and a permanent colostomy performed. The patient was alive and well five and a half years after the second operation though it was a definitely unfavorable case and would ordinarily have been considered beyond surgical aid. The fourth case had a perineal recurrence eight months after removal of a large cancer of the rectum. It was considered inoperable at that time but increased in size and became so painful that a radical perineal excision and complete prostatectomy was done fourteen months later. The patient remained asymptomatic for four years but now, after five years is bedridden. It is believed that earlier reoperation would have given even better results.

These cases indicate that local recurrence of cancer without distant metastases is quite amenable to surgery if the tumor can be completely removed. No explanation was found for the absence of distant metastases. It is emphasized that cases of cancer should not be given up simply because a recurrence develops. Radical surgery may be followed by long periods of arrest. 4 references. 3 figures.

RADICAL SINGLE STAGE EXTIRPATION FOR CANCER OF THE LARGE BOWEL WITH RETAINED FUNCTIONAL ANUS.

W. Wayne Babcock, Temple University, Philadelphia, Pa. Surg., Gynec. & Obst. 85:1-7, July 1947.

A method of abdominal proctosigmoidectomy is described in which the lower half of the sigmoid and the entire rectum are removed. A high resection is made of tributary lymphatics and the upper sigmoid is brought through the anus and becomes united to the anal mucous membrane at the upper sphincter margin. No important vessels or nerves are injured in the perineum. A normally appearing perineum and anus are provided with no tendency to fistula or mucous prolapse.

The operation is described in detail. The preferred incision is about 3 cm. above and parallel to the left inguinal ligament. This divides the aponeurosis rather than muscle in the depths of the wound. The incision may be extended laterally between the fibers of the external oblique if more room is needed. This gives adequate exposure and a better upper abdominal wall postoperatively than the vertical incision. The rectum is freed. The sigmoid is tested for vascularity and freed so that it will extend from the sacral promontory through the pelvic floor. The lower descending colon may require some mobilization. A soft folded gauze tape 4 cm. wide by 1 m. long is tied around the sigmoid at the proved vascular level and the ends packed on the pelvic floor behind the rectum. This controls oozing and enables traction to be made on healthy tissue during the perineal stage. No peritonealization of the denuded pelvis is done and no pelvic peritoneal diaphragm has been found necessary. The mucous membrane over the sphincter is not removed.

With the patient in the lithotomy position, the rectum is wiped out and packed with gauze saturated in a 3.5 per cent tincture of iodine. A mid-

line perineal incision is extended down to the right of the coccyx. The rectum is divided just above the sphincters, well below the tumor, the upper edge caught with clamps and the freed rectum and sigmoid withdrawn, wrapped in a towel and laid on the abdomen. The levator ani muscles are sutured with interrupted No. 32 gage stainless steel sutures without constricting the intestine. The perineal wound is closed without drainage, stainless steel sutures being used throughout. The withdrawn bowel is incised about 6 cm. from the skin, a 28 F rectal tube inserted and tied in and the remainder of the bowel cut off. The withdrawn sigmoid is surrounded by a vascular tube from the pelvic floor and anus for about 5 to 7 cm. and may slough back several centimeters without harm. Less than 4 per cent of patients have developed perineal infection with this technic.

The rectal tube sloughs out about the sixth day leaving viable bowel protruding from the anus. This is snared or burned off 1 or 2 cm. beyond the skin two to six days later if the perineal wound is well healed. The protruding end of the sigmoid retracts spontaneously within the anus and unites with the edge of the anal mucosa just above the sphincters. Hemostasis of the cut end must be complete and the intestine not divided too close to the skin or invisible bleeding may occur into the colon. The patient usually has a defecation sense and can voluntarily contract the sphincters in about two weeks but usually cannot retain semisolid or liquid sigmoid contents. A rapid acting laxative should therefore be taken every second to fourth day when arising. An enema or colonic irrigation every two to five days is substituted for the laxative after two months. The scar uniting the sigmoid to the anus should be frequently dilated if it tends to contract.

Radical resection for cancer of the large intestine, 97 per cent being advanced cases, had a hospital mortality of 9 per cent. 9 references. 24 figures.

(*The applicability of this operation to cancers of the rectum above the peritoneal fold certainly violates surgical principles which have stood the test of time. No end results which compare with older types of operation have ever been published by other surgeons.*

It is difficult to see how cure could be hoped for when there is metastasis to the glands in the upward zone of spread, for this operation does not purport to be a radical gland dissection type of procedure at all.

As for the sacral anus, it would be very interesting to have the end results of a large group of these cases so far as function is concerned. Actually, only the author and some of his associates seem entirely satisfied that a sacral anus is more desirable than an abdominal one. This view unquestionably is in disagreement with most surgeons doing radical resections of the rectum. No type of operation for cancer anywhere can be deemed worthy until the end results are buttressed by satisfactory figures from a large group of unbiased surgeons.—F. W. R.)

VOLVULUS OF THE SIGMOID COLON AND ITS TREATMENT.

Christian Bruusgaard, Ullevaal Hospital, Oslo, Norway. Surgery 22: 466-78, September 1947.

About 75 per cent of cases of volvulus occur in the large intestine, usually in the sigmoid colon. The etiology and pathogenesis are discussed. There are several characteristic symptoms, the first and most important being a change from normal bowel habits to periodic or lengthy constipation, occasionally with bloody or foul smelling stools. Transient abdominal pains eventuate in a severe acute attack. The duration of symptoms is usually twelve to seventy-two hours but may be ten days. Except for cases of acute strangulation, volvulus of the sigmoid has less severe symptoms than other varieties. The acute pain is characteristically continuous and diffuse, somewhat more severe about the umbilicus and interrupted by recurrent colicky pains caused by hyperperistalsis. Marked abdominal distention is largely localized in the epigastrium, about the umbilicus and in the left hypochondrium. Roentgenographic examination is most important diagnostically and should be made whenever volvulus is suspected. It shows a distended sigmoid, little change in the level of fluid in the sigmoid when the patient is erect, and moderate distention of the rest of the colon. Distention of the cecum and small intestine is rare and chiefly seen in peritonitis. The domes of the diaphragm are high and almost rigid. Barium enemas show the upper rectum characteristically shaped like a bird's-bill with spiral narrowing. The sharply cut off margin seen in carcinoma never appears in volvulus.

The treatment is nonoperative and operative. Spontaneous untwisting of the sigmoid may occur when the torsion is less than 360 degrees. The easiest method of emptying the sigmoid is to insert a rectal tube past the stricture. This is most easily done by careful inflation of the rectum, passage of the proctoscope to the torsion and guiding a lubricated 60 cm. rectal tube past the obstruction which is usually 15 to 25 cm. from the anus. The possibility of perforation by this method cannot be ignored but experience in this series indicated that it was unlikely. This should not be done if there is doubt whether serious circulatory changes in the intestine have developed. This treatment is only for relief of symptoms and is not definitive as the torsion frequently recurs.

The preferable operative treatment when there is no gangrene or other serious intestinal damage is laparotomy, insertion of a rectal tube from below and detorsion. A hand is placed in the peritoneal cavity to control passage of the tube as soon as the abdomen is opened, delaying reposition of the sigmoid until after it has been emptied. The loop should be lifted out of the abdomen, punctured and resected if it is gangrenous. The distal stump is inverted and buried after resection and a colostomy done with the upper end. The two parts of the sigmoid may be anastomosed at another operation if desired.

Proctoscopy and rectal intubation was done one hundred and twenty-

three times, 3 patients dying of complications after apparently successful treatment and 1 died of instrumental perforation. The mortality rate for 91 patients treated by a combination of the nonoperative and operative treatment described was 14.2 per cent. The reported mortality when only operative treatment is used varies from 30 to 60 per cent. A group of 5 cases of repeated torsion were satisfactorily treated by radical resection of the sigmoid in 4 stages during symptom-free intervals. The stages were cecostomy; Mikulicz exteriorization resection; closure of sigmoidoscopy; and closure of the cecostomy. 16 references. 3 tables. 4 figures.

CARCINOMA OF THE COLON.

Arthur W. Allen, Claude E. Welch and Gordon A. Donaldson, Boston, Mass. Ann. Surg. 126:19-30, July 1947.

Results of recent advances in the surgical treatment of this disease as observed in a series of 105 patients with cancer of the colon but not of the rectum are discussed. Operations that save the rectal sphincter in treating carcinoma of the colon are being more used. It has been shown that the growth spreads upward from cancer of the rectum and lower colon and a shorter lower segment of normal tissue need be sacrificed. The sphincter should not be preserved however at the risk of cure and when recurrence may be prevented by a more radical operation with permanent colostomy. The incidence of resectability in this series was 95 per cent. Radical resection with primary anastomosis is preferred to the Mikulicz type of exteriorization.

Final excision of all scar tissue followed by end to end anastomosis and dropping the bowel free into the peritoneal cavity is preferred for the closure of complete colostomies. Tube cecostomies usually heal spontaneously. The operative mortality of resections for cancer of the colon at the Massachusetts General Hospital has decreased from 17.5 per cent for the period 1925 to 1942 to 2 per cent for 1943 to 1946.

Important points in surgery of colonic carcinoma are emphasized. Decompression often permits early operation in cases of intussusception or an incompetent ileocecal valve. An early ileotransverse colostomy is indicated if decompression fails or the obstruction is not above the cecum. Otherwise large tube cecostomy provides the safest and most effective immediate relief and is often necessary as an emergency measure. Enough gas and liquid may be released from the intestine by a suction trocar to permit completion of the cecostomy without contaminating the peritoneum. Exteriorization is condemned for an acute complete obstruction as the patient is not in condition to withstand it. Exploratory abdominal operations are also dangerous with an acute obstruction of the large intestine as fatal peritonitis may follow manipulations of the lesion. A cecostomy should be done as far away from the anticipated site of final operation as possible.

The approximate location of the lesion may be shown by the gas pat-

tern of a plain abdominal film. A sigmoidoscopy or barium enema is used if this fails. Preoperative preparation is discussed. Sulfathalidine is better than sulfasuxidine because it is as effective and keeps the intestinal contents semisolid so that bacteria are more easily controlled than in liquid feces. The anesthetic is determined by circumstances but drip procaine spinal anesthesia with supplementary small amounts of pentothal sodium if necessary is preferred.

A long right paramedian incision is used for a right colectomy as it gives better exposure of vessels and lymph nodes. The flexures and midcolon tumors are operated through a transverse incision. Paramedian exposures are used for operations on the left colon when a permanent colostomy may be necessary but oblique incisions are satisfactory for low sigmoid tumors with primary end to end anastomosis. Wide resection is done on the proximal side. Early intestinal division between thin clamps gives better exposure and makes the remainder of the operation easier. The tumor and contact structures are removed en masse with part or all the involved nonvital organs in the abdomen and pelvis. The blood supply of the anastomosis is then determined visually. The open method of anastomosis is now preferred, the two rows of fine catgut sutures no longer being used. Equally good results to the aseptic technic have been obtained by carefully avoiding major contamination and changing the instruments, drapes and gloves used in the anastomosis. A posterior outer layer of interrupted No. 30 cotton sutures is placed before the proximal clamp is removed and also the distal clamp unless the rectum itself is to be used. Transverse mattress sutures are used across the white lines of the intestine because Lembert sutures do not hold there. A posterior over and over or locked stitch is used and a Connell suture anteriorly. The colon is not sectioned obliquely. An outer nonabsorbable row of sutures prevents permanent constriction at the anastomosis. The mesenteric opening is closed on both sides when the anastomosis is inside the peritoneal cavity but the lateral margins between the pelvic peritoneum and intestine are left open if a pelvic dissection is necessary, thus eliminating need for drainage through the ischial fossa and avoiding fistula formation with stenosis of the suture line. Seepage is usually gradual and often is spontaneously absorbed in the peritoneal cavity. The sulfanilamides are no longer used locally in either the peritoneal cavity or the wound though sulfasuxidine or sulfathalidine may be beneficial when there is serious fecal contamination. Preliminary cecostomy or colostomy is only done for complete obstruction. The colon may be completely flushed through a previous cecostomy by inserting a Miller-Abbot tube through an opening in the anterior surface of the rubber arm leading from the right-angle glass tube used to prevent kinking in the abdominal wall. Solutions are introduced in one lumen and removed by suction through the other. The end of the Miller-Abbot tube reaches the point of obstruction by peristalsis and flushing is so thorough that the need for preliminary transverse colostomy is largely eliminated. Dicumarol is used postoperatively in suitable patients to prevent venous thrombosis. Prophylactic in-

terruption of the superficial femoral vein is done in patients with arteriosclerosis or other contraindications to anticoagulant drugs. This may be done before or at the time of operation if the tumor is above the floor of the pelvis but should be postponed forty-eight hours if pelvic dissection is necessary. The patients in this series without a second stage operation averaged a little less than twenty-five days in the hospital while those requiring preliminary drainage or a 2-stage operation averaged almost forty days, six days being preoperative. 13 references. 5 tables. 2 figures.

References to Current Articles

Progress in the Surgical Management of Diverticulitis of the Sigmoid colon. John de J. Pemberton, B. Marden Black and Charles R. Maino, Mayo Clinic, Rochester, Minn. Surg., Gynec. & Obst. 85:523-34, October 1947. Reports 389 cases of diverticulitis of the sigmoid colon treated surgically; 245 in 1908 to 1940 inclusive and 141 in 1941 to 1945 inclusive. Reduction in the surgical mortality in the later series is attributed chiefly to the use of modern chemotherapy. 26 references. 4 tables. 3 figures (graphs).

Management of a Permanent Colostomy. Study of 100 Patients at Home. Cuthbert E. Dukes, St. Mark's Hospital, London. Lancet 2:12-14, July 5, 1947.

A Comparison of the Value of the Rectal Swab and the Fecal Specimen in Culturing Stools. William J. H. Fischer, Jr., Rhode Island Hospital, Providence, R. I. New England J. Med. 237:53, July 10, 1947.

Evaluation of Vagotomy in Chronic, Non-Specific Ulcerative Colitis. Clarence Dennis and Frank D. Eddy, University of Minnesota Hospitals, Minneapolis, Minn. Proc. Soc. Exper. Biol. & Med. 65:306-307, June 1947.

Lysozyme in Chronic Ulcerative Colitis. Karl Meyer, Alfred Gellhorn, John F. Prudden, William L. Lehman and Anita Steinberg, College of Physicians and Surgeons, and the Presbyterian Hospital, New York, N. Y. Proc. Soc. Exper. Biol. & Med. 65:221-22, June 1947.

A Clamp for Crushing the Colostomy Spur. V. J. Kinsella, Sydney, Australia. Australian & New Zealand J. Surg. 16:283-84, April 1947.

Perforating Injuries of the Rectum, with Case Reports. Rolland O'Regan, Wellington, New Zealand. Australian & New Zealand J. Surg. 16: 253-61, April 1947.

A Case of Multiple Polyposis of the Colon and Rectum. A. S. Johnson, Sydney, Australia. Australian & New Zealand J. Surg. 16:285-86, April 1947.

Cancer of the Rectum. An Analysis of Cases Occurring in Connecticut During 1935-1945. Edward J. Ottenheimer, Windham Community Hospital, Willimantic, Conn. New England J. Med. 237:1-7, July 3, 1947.

Anal Ileostomy with Preservation of the Sphincter. Mark M. Ravitch and David C. Sabiston, Jr., The Johns Hopkins University, Baltimore, Md. Surg., Gynec. & Obst. 84:1095-99, June 1947.

Cecostomy and the Miller-Abbott Tube. John Bradford Millet, Massachusetts General Hospital, Boston, Mass. Surg., Gynec. & Obst. 84:1083-86, June 1947.

Asymptomatic Hepatodiaphragmatic Interposition of the Colon. A Report of Two Cases. Alvin C. Wyman, U. S. Naval Training Center, San Diego, Calif. Gastroenterology 9:213-16, August 1947.

Acute Diverticulitis of the Cecum. Study of Ninety-Nine Surgical Cases. Leo Anderson, Mayo Clinic, Rochester, Minn. Surgery 22:479-88, September 1947.

Spontaneous Salpingo-Colic Fistula Complicating Pyosalpinx. Edmund J. Croce (Major, M. C., A. U. S.), Halloran General Hospital, Staten Island, N. Y. Am. J. Surg. 73:618-20, May 1947.

Localized Acquired Megacolon Treated By Sympathectomy. H. G. Smithy and F. E. Kredel, Charleston, S. C. Surgery 22:259-70, August 1947.

The Lynch Operation for Carcinoma of the Rectosigmoid. Jerome M. Lynch and G. Johnson Hamilton, New York, N. Y. Am. J. Surg. 74:3-7, July 1947.

Spontaneous Ileocolic Fistula. A Complication of Carcinoma. Vincent J. Vinci, Christie E. McLeod and Louis O. LaBella, Middletown, Conn. Ann. Surg. 126:246-50, August 1947.

The Management of Carcinoma in the Several Parts of the Colon. Wm. F. MacFee, New York, N. Y. Ann. Surg. 126:125-39, August 1947.

Surgical Aspects of Amoebiasis. P. Theron, University of Aberdeen, Aberdeen, Scotland. Brit. M. J. 4516:123-26, July 26, 1947.

An Improved Permanent Colostomy. B. K. Rank and Julian Smith, Jr., Melbourne, Australia. Surg., Gynec. & Obst. 85:75-80, July 1947.

Right-Sided (Regional) Colitis. Burrill B. Crohn, John H. Garlock and Harry Yarnis, Mt. Sinai Hospital, New York, N. Y. J. A. M. A. 134:334-38, May 24, 1947.

Prognosis in Carcinoma of the Colon and Rectum. A 10 Year Follow-up of 337 Patients. Bentley P. Colcock, Lahey Clinic, Boston, Mass. Surg., Gynec. & Obst. 85:8-13, July 1947.

Transplantation of the Ureters into the Rectosigmoid. Yerrant Jidigian and William Bickers, American University of Beirut, Beirut, Syria. Surg., Gynec. & Obst. 85:30-34, July 1947.

Management of Colostomies Performed for War Injuries. Hall G. Holder, San Diego, Calif., and Edward F. Lewison, Baltimore, Md. Ann. Surg. 126:253-61, September 1947.

Solitary Diverticulitis of the Cecum, Report of Five Cases. William C. Beck and George S. Hopkins, Guthrie Clinic and the Robert Packer Hospital, Sayre, Pa. Guthrie Clin. Bull., 17:12-14, July 1947.

A Simple and Aseptic Method of Ileocolostomy. J. Ten Kate, The Hague, Holland, St. Antonius Hospital at Voorburg, Holland. Surg., Gynec. & Obst. 85:217-20, August 1947.

Earlier Ileostomy in Severe Ulcerative Colitis. Frank H. Lahey. Surg., Gynec. & Obst. 85:230-32, August 1947.

Carcinoma of the Right (Proximal) Portion of the Colon. Charles W. Mayo, Mayo Clinic, Rochester, Minn. S. Clin. North America 27: 875-84, August 1947.

Carcinoma of the Large Intestine. Diagnostic Errors in Relation to Location of the Lesion. Raymond J. Jackman, Harold A. Neibling and John M. Waugh, Mayo Clinic, Rochester, Minn. J. A. M. A. 134: 1287-89, August 16, 1947.

Multiple Polyposis of the Colon with Malignant Change Involving Colon and Appendix. Case Report. Bernard Maisel and N. Chandler Foot, New York Hospital and Cornell University Medical College, New York, N. Y. Ann. Surg. 126:262-69, September 1947.

Enema Tube Perforation of the Colon. Carl Davis, Jr., Chicago, Ill. Ann. Surg. 126:377-79, September 1947.

Wounds of the Colon and Rectum. C. Frank Chunn, Tampa, Fla. J. Florida M. A. 34:269-76, November 1947.

Cancer of the Colon and a Detail of Operative Technique. Rudolf Brandenberg and Tore Ekblom, Sodersjukhuset, Stockholm, Sweden. Acta chir. Scandinav. 95:461-74, Fasc. 5, 1947.

Unusual Lesions of the Large Intestine. Richard B. Cattell and Bentley P. Colcock, Lahey Clinic, Boston, Mass. S. Clin. North America 27: 651-58, June 1947.

Prognosis of Patients with Carcinoma of the Colon, Rectosigmoid and Rectum. Frank H. Lahey, Lahey Clinic, Boston, Mass. S. Clin. North America 27:670-74, June 1947.

The Significance of Mucosal Polyps of the Colon and Rectum. Neil W. Swinton, Lahey Clinic, Boston, Mass. S. Clin. North America 27: 675-80, June 1947.

Safety Factors in Surgery of the Colon. John A. Duncan, Seattle, Wash. Northwest Med. 46:366-68, May 1947.

Prevention of Adhesions in the Right Colonic Gutter Following Right Colonic Resections. Carl Y. Werelius, Baltimore, Md. Am. J. Surg. 74:187-88, August 1947.

Carcinoma of the Colon in Childhood and Adolescence. J. Harvey Johnston, Jr., Jackson, Miss. Am. J. Surg. 73:703-12, June 1947.

Closure of Colostomies and Fistulas of the Large Bowel. Charles S. Hertz (Lt. Col., M.C., A.U.S.), Allentown, Pa., and D. Henry Poer (Col., M.C., A.U.S.), Atlanta, Ga. Am. J. Surg. 74:163-73, August 1947.

33. Intestinal Obstruction

STUDIES ON EXPERIMENTALLY PROVOKED ILEUS WITH REFERENCE TO INHALATIONAL THERAPY.

Lars Troell, Karolinska Institute, Stockholm, Sweden. Acta chir. Scandinav. 95:11-112, Suppl. 122, 1947.

A principal factor in the treatment of ileus is to maintain viability of the intestinal wall endangered by distention or external pressure. Relief may be afforded by the Miller-Abbott tube or Wangensteen suction when strangulation is absent. It was also stated that inhalations of 100 per cent oxygen would produce good intestinal decompression. Investigations of the possibilities of improving the oxygen treatment of ileus were made. The diffusion of gas in experimentally produced ileus was first studied followed by experiments on intestinal motility in oxygen poisoning using an abdominal window.

Rabbits were used under intravenous urethane narcosis, respiration and intestinal motility being constantly controlled. The animals were placed in a pressure chamber and intestinal movements observed through a hole in the chamber by a mirror placed over the abdominal window. Studies of intestinal motility when the animals were inhaling oxygen at different pressures and carbon dioxide concentrations showed that a slight to strong inhibition of motility was produced in about half the animals after four or five hours by continuously breathing 100 per cent oxygen under 1 atmosphere of pressure. There was no inhibition in other cases. A moderate inhibition was produced in all cases after continuously inhaling 100 per cent oxygen at 2 atmospheres pressure for about three hours. Complete inhibition was produced after six hours. The motility returned to normal in ten minutes to two hours after the inhalation of oxygen was stopped. These experiments suggested that inhibition of intestinal motility is a sign of oxygen poisoning. This poisoning was eliminated by alternating a combination of 60 per cent oxygen and 40 per cent helium for two hours and 100 per cent oxygen and air for an hour each. The total volume of gas in the intestine was reduced a little more by this combination than by breathing oxygen for three hours and air for one hour.

The experimental addition of various concentrations of carbon dioxide showed that partial pressures of 4 to 8 per cent in the inhaled gas did not accelerate the inhibition produced by breathing 100 per cent oxygen at 2 atmospheres pressure. The gas diffusion from the intestine was increased about 6 per cent by a carbon dioxide concentration of 2.5 to 4.5 per cent in the inhalation gas. The diffusion was further increased about 6 per cent by an excess pressure of 1 atmosphere. A combination of excess pressure of 1 atmosphere and an increased carbon dioxide concentration increased intestinal gas diffusion 11 to 13 per cent. It is believed that 3 per cent is the best concentration of carbon dioxide to use. This not only increases the diffusion of gas from the intestine but counteracts the danger of atelectasis and bronchopneumonia by increased pulmonary ventilation.

These studies suggest that the inhalation of oxygen may be an aid to the usual measures for keeping the gastro-intestinal tract collapsed but that prolonged inhalation of 100 per cent oxygen is harmful and should be replaced by a combination of 60 per cent oxygen with 40 per cent helium with 100 per cent oxygen and air alternating, while a carbon dioxide concentration of 3 per cent should be helpful. A 100 per cent oxygen concentration should be used for excess pressure treatment but not for over two hours. Clinically, this inhalation therapy should be used early and accompanied by Wangensteen intraduodenal suction. 103 references. 22 tables. 25 figures.

References to Current Articles

The Production and Excretion of Urea and Oxygen Consumption During Intestinal Obstruction in Rabbits. R. C. Herrin, University of Wisconsin Medical School, Madison, Wis. Am. J. Physiol. 149:494-501, May 1947.

Obstruction of the Small Intestine Due to Adhesions and Bands. An Investigation of the Early and Late Results after Operative Treatment and an Aetiological Study of Recurrences. S. S. Krook, Surgical Department II of Sodersjukhuset, Stockholm, Sweden. Acta chir. Scandinav. 95:3-200, Suppl. 125, 1947.

Myoma of the Small Intestine Causing Intestinal Obstruction. C. C. Cookson, County Hospital, Farnborough, Kent, England. Lancet 2:280, Aug. 23, 1947.

Surgical Treatment of Intestinal Knot Formation (*K voprosu ob operativnom lechenii kishechnykh uzloobrazovanii*). M. I. Perel'man, The Yaroslavl' Medical Institute, U.S.S.R. Khirurgiya No. 2, 45-51, 1947.

Tests for Determining the Viability of Strangulated Bowel. Manuel E. Lichtenstein, Northwestern University Medical School, Chicago, Ill. J. A. M. A. 135:221, Sept. 27, 1947.

Gallstone Ileus. Ted Lace, Fort Worth, Tex. Am. J. Surg. 74:86-89, July 1947.

Nontumid Ileocolic Intussusception in an Adult. Report of a Case With Cecal Ulcer. Lester Blum, Mount Sinai Hospital and Beekman Hospital, New York, N. Y. S. Clin North America 27:355-60, April 1947.

Intussuscepting Submucous Lipoma of Right Colon. George T. Pack and Robert J. Booher, New York Medical College, New York, N. Y. S. Clin. North America 27:361-72, April 1947.

Acute Intestinal Obstruction Due to Orange Pulp Bezoar. Carl F. Baumeister and Duane D. Darling, Chicago, Ill. Ann. Surg. 126:251-52, August 1947.

Plasmacytoma of Pancreas and Duodenum Causing Intestinal Obstruction. Angela Hoffman. London, England. Lancet 1:910, June 28, 1947.

Persistent Omphalomesenteric (Vitelline) Artery Causing Intestinal Obstruction and Gangrene of Meckel's Diverticulum. Valentine R. Manning, Jr. and Edward F. McLaughlin, Philadelphia Pa. Ann. Surg. 126:358-65, September 1947.

Bezoars Causing Acute Intestinal Obstruction. Charles H. Watt and J. W. Harner, Thomasville, Ga. Ann. Surg. 126:56-63, July 1947.

Mesenteric Vascular Occlusion Complicating Thrombo-Angiitis Obliterans. Eugene J. Garvin, Misericordia Hospital, Philadelphia, Pa. Am. J. Surg. 74:211-15, August 1947.

Mercury—Its Rôle in Intestinal Decompression Tubes. Meyer O. Cantor, Detroit, Mich. Am. J. Surg. 73:690-94, June 1947.

34. Anus

A SUCCESSFUL METHOD FOR SECURING PRIMARY WOUND HEALING AFTER RESECTION OF FISTULAE IN ANO. A PRELIMINARY REPORT.

John M. Kenney, Santa Rosa, Calif. Ann. Surg. 126:320-23, September 1947.

Twelve patients had a resection of a fistula in ano with primary wound closure; 11 healed by primary intention, 1 had a mild postoperative infection. There were no recurrences over a follow-up period of six months.

Patients were prepared for surgery with low residue diet and sulfasuxadine. The operation was performed under spinal anesthesia with the patient in the flexed, prone position. A probe was passed through the tract and bent to form a circle. An elliptic incision was made around either orifice but the two incisions were never joined. Using gentle traction the tract was dissected out, going over, under, or through the sphincter but not severing it. Careful search was made for branches of the tract which were likewise excised. The tissues of the wounds were then diffusely and carefully infiltrated with 20 to 100 cc. of penicillin, 2,000 units per cubic centimeter. The dead space in the wound was obliterated with multiple interrupted sutures of fine cotton. The mucosal incision was closed with mattress sutures of 4-0 chromic; the skin incision was closed, without drainage, with mattress sutures of cotton. The points emphasized in the technic were: (1) accurate localization of tracts; (2) careful dissection; (3) infiltration with penicillin; (4) complete hemostasis; (5) obliteration of dead space; (6) complete closure of mucosal incision.

The benefits noted were a short hospital stay, lack of need of prolonged postoperative treatment, absence of pain, absence of even temporary fecal incontinence, minimal scarring around the anus. 1 reference.

Author's abstract.

References to Current Articles

Treatment of Fistula in Ano. J. P. Lockhart-Mummery, St. Mark's Hospital, London. Lancet 1:671-72, May 17, 1947. Each case of fistula in ano must be considered individually and a suitable surgical procedure planned. It is unwise to operate if there is acute sepsis or an undrained abscess. Attention should be first directed toward freely open-

ing all secondary tracks to provide free drainage. A search should be made for a deep cross track behind the anal canal. Unhealthy tissue should be removed. The wounds should first be left open to drain into a large flat dressing. After a few weeks the main track communicating with the rectum should be freely divided. An operative procedure is reported for "incurable" fistulae.

Reduction of Rectal Prolapse. J. F. Wenzel, St. Mary's Hospital, Detroit, Mich. Am. J. Surg. 73:596, May 1947.

Successful Operation for Imperforate Anus and Imperforate Rectum. Three Year Follow-Up Report. Joseph Liburt, Huntington Hospital, Huntington, N. Y. Am. J. Surg. 74:228-30, August 1947.

Rectal Complications of Episiotomy. William B. Marbury and Milton L. Goldman, Washington, D. C. J. A. M. A. 134:1174-75, Aug. 2, 1947.

35. Liver and Biliary Tract

OBSTRUCTION OF VITALLIUM TUBES BY BILIARY SEDIMENT. REPORT OF NINE CASES AND REVIEW OF THE LITERATURE.

Harold A. Neibling and Waltman Walters, Mayo Clinic, Rochester, Minn. Proc. Staff Meet., Mayo Clin. 22:424-32, Sept. 17, 1947.

In a three year period seventy-four vitallium tubes were used in duct anastomoses at the Mayo Clinic and in the seven months immediately prior to the report eight vitallium tubes had to be removed because of obstruction with biliary sediments and a ninth was found obstructed with sediment at necropsy. Review of the literature shows that other authors have reported only a few cases of obstructed vitallium tubes.

In the cases in which the tubes had been used at the clinic for the most part multiple biliary operations had been performed, and in all cases resultant obstruction of the duct had occurred prior to treatment at the clinic. In 7 of the 9 cases vitallium tubes had been used as splints in end to end suture of the ducts. In 5 of these, anastomosis was considered good at the time of operation, in 1 it was fair, and in 1 poor owing to mechanical inability to bring the ends together. One patient had undergone hepaticojejunostomy which was a satisfactory anastomosis, and 1 patient had undergone hepaticoduodenostomy which also was mechanically satisfactory. In no case at removal of the vitallium tube was obstruction distal to the tube considered as a cause for deposit of biliary sediment at time of reoperation. In only one case was no splint used in the duct after removal of the vitallium tube. T tubes were inserted in 4 cases, a catheter extending through the duct into the duodenum in 1, a polythene tube in 1, and in 1 an end to end hepaticojejunostomy was done.

The symptoms and signs of obstruction in a vitallium tube were found to be similar to those produced by other forms of extrahepatic biliary obstruction. They usually included distress in the right upper quadrant of the abdomen, jaundice, chills and fever, pruritus, malaise, nausea, vomiting,

acholic stools and dark urine. Any or all of these might be present and all were dependent upon the degree of obstruction of the tube. Predominance of individual symptoms also depended upon whether the obstructed vitallium tube remained tightly adherent to the duct wall producing unremitting and increasing obstruction or whether it might loosen and form a ball-valve type of obstruction with intermittent symptoms. The time necessary for the development of symptoms of obstruction varied as did the time of removal of the tube. In this series from six to twenty-six months elapsed between the insertion of the tube and its removal because of obstruction. In retrospect it seemed probable that obstruction was present in many of the cases for some time prior to the removal of the tube. This was demonstrated in 5 of the cases in which some symptom of obstruction was present, for periods of three, four, five, seven and eight months respectively before the removal of the tubes.

Material found to be obstructing the tubes was analyzed and the chloroform soluble portion of the contents was found to contain an average of 11.1 per cent cholesterol and 10.2 per cent bilirubin. Nonsoluble portions of the biliary sediment probably were composed of insoluble calcium, pigments and organic detritus.

It was the opinion of the authors that support within the duct that can be released at the discretion of the surgeon or one that will pass from the duct of its own accord should be utilized rather than a vitallium tube. Methods of establishing such support include proper use of T tubes or Mayo-Sullivan tubes of polythene (*Obtained from Dr. J. H. Grindley of the Division of Experimental Medicine and Surgery, Mayo Foundation, Rochester, Minn.*) or rubber or the McArthur method of repair in which the anastomosis is made over a rubber catheter, the lower two-thirds of which extends into the duodenum and is held in place by a silk suture through the catheter brought out of the incision to the exterior where it is attached to a button on the abdominal wall. The latter method is very satisfactory and the catheter can be left in place any desired length of time before removal of the suture allows intestinal peristalsis to pull it into the lumen of the intestine from the duct. The Mayo-Sullivan tube is most frequently sutured to the duct with absorbable sutures and is expected to leave the duct in a maximum of about six weeks. T tubes are best used in cases in which they can be brought out through a normal portion of the duct and a long limb of the tube allowed to pass through the anastomosis.

Experiments are being carried out using polythene tubes of Mayo-Sullivan type rather than rubber tubes. 14 references. 1 table. 3 figures.

Author's abstract.

(*As yet no prosthesis available for clinical use has been showed to resist "plugging". This can be in a large part prevented by irrigating the T tube with an ether-oil mixture, as suggested by Pribram, every two weeks.* —I.S.R.)

BENIGN STRICTURES OF THE BILIARY DUCTS.

Richard B. Cattell, Lahey Clinic, Boston, Mass. J. A. M. A. 134:235-40, May 17, 1947.

Benign strictures of the biliary ducts are difficult to correct because of the many technical problems. Results in a series of 123 patients operated upon for this condition are reported. These strictures are usually a complication of previous gallbladder surgery and may be avoided by adequate exposure and careful dissection. Fibrosis and narrowing of the ampulla of Vater is a comparatively common but frequently unrecognized cause. Operative injury caused 80 per cent of cases in this series.

The time of repair is important, being best at the original operation if the injury is discovered. If not discovered until later, it is better to wait until the inflammation and edema have subsided. There is no urgency if there is an external fistula and operation should be delayed several months unless there is obstructive jaundice when operation should be done in four to six weeks. Too early operation often results in failure with more destruction of the ducts. Repair may be accomplished by an anastomosis of the upper end of the duct to the gastro-intestinal tract or restoration of continuity by suturing the duct over a tube and keeping the normal sphincter action at the lower end. The latter method is preferred with use of a T tube if practicable. Repair is materially facilitated by complete mobilization of the duct, duodenum and head of the pancreas so that the posterior portion of the head is visualized. This permits approximation without tension to a short hepatic duct at the hilus. Injury to the pancreatic duct must be carefully avoided by not freeing the left side of the biliary duct near the ampulla. Preoperative use of vitamin K and improved operative technic have reduced mortality over 50 per cent. 13 references. 5 tables.

(*The reviewer agrees with the author. The best time to repair an injured duct is when the injury has occurred. Direct suture achieving mucosal approximation is essential.*—I.S.R.)

References to Current Articles

Methods for Differential Diagnosis of Painless Jaundice. John R. Robinson, Kankakee, Ill., and Charles A. Moyer, Dallas, Tex. Surg., Gynec. & Obst. 85:535-40, October 1947. Describes a method for the differential diagnosis of painless jaundice, based on commonly used and easily performed laboratory tests; 5 illustrative cases are reported. 15 references. 5 figures.

Modern Physiologic Concepts. James F. Weir, Mayo Clinic, Rochester, Minn. J. A. M. A. 134:579-85, June 14, 1947.

Needle Biopsy of the Liver. F. W. Hoffbauer, Minneapolis, Minn. J. A. M. A. 134:666-70, June 21, 1947.

Interpretation of Liver Function Tests. Edwin E. Osgood, University of Oregon Medical School, Portland, Ore. J. A. M. A. 134:585-88, June 14, 1947.

Diagnostic Management of Patients with Jaundice. J. E. Giansiracusa and T. E. Althausen, University of California Medical School, San Francisco, Calif. J. A. M. A. 134:589-95, June 14, 1947.

The Rate of Removal of Intravenously Injected Bromsulphalein by the Liver and Extra Hepatic Tissues of the Dog. Clarence Cohn, Rachmiel Levine and Daniel Streicher, Research Institute, Michael Reese Hospital, Chicago, Ill. Am. J. Physiol. 152:299-303, August 1947.

Experimental Studies on Biliary Regurgitation During Cholangiography. Harry W. Mixer, Leo G. Rigler and Miguel V. Gonzalez Oddone, University of Minnesota Medical School, Minneapolis, Minn. Gastroenterology 9:64-80, July 1947.

Cholecystoduodenocolic Fistula. A Case Report. Gilbert H. Marquardt, George M. Cummins, Jr. and Earl E. Barth, Wesley Memorial Hospital, Chicago, Ill. Gastroenterology 9:87-91, July 1947.

Cholecysto-Gastric Fistula. Report of a Case. Mario Miranda, Carlos De Castro, Nelson Passarelli and Mariano De Andrade, University of Brazil, Rio de Janeiro, Brazil. Gastroenterology 9:92-94, July 1947.

Partial Hepatectomy and Right Hemicolectomy for Carcinoma of the Hepatic Flexure. Ronald W. Raven, Gordon Hospital for Diseases of Rectum and Colon. Brit. M. J. 4519:249-50, Aug. 16, 1947.

Liver Function Tests in the Diagnosis of Jaundice. A Review of 200 Cases. N. F. Maclagan, Westminster Hospital Medical School, London, England. Brit. M. J. 4518:197-201, Aug. 9, 1947.

Cholecystitis and Colelithiasis in the Young. E. Craig Heringman and David W. Aiken, Louisiana State University School of Medicine and Charity Hospital of Louisiana, New Orleans, La. Am. J. Surg. 74:27-32, July 1947.

Salmonella Typhi Murium Cholangitis Treated With Streptomycin. David A. Dreiling, Mount Sinai Hospital, New York, N. Y. S. Clin. North America 27:373-79, April 1947.

Spontaneous Rupture of the Common Bile Duct Following Choledocholithotomy. David A. Dreiling, Mount Sinai Hospital, New York, N. Y. S. Clin. North America 27:381-87, April 1947.

A Rare Anomaly of the Cystic Duct. H. E. Leiter, Mount Sinai Hospital, New York, N. Y. S. Clin. North America 27:389-93, April 1947.

Modified Cholecystectomy in Fulminating Cholecystitis. L. J. Morse and J. S. Barb, Jewish and Queens General Hospital, New York Medical College and Jewish Hospital of Brooklyn, N. Y. S. Clin. North America 27:395-99, April 1947.

Congenital Absence of Gallbladder. Earl O. Latimer, F. L. Mendez, Jr. and W. J. Hage, Northwestern University Medical School and Wesley Memorial Hospital, Chicago, Ill. Ann. Surg. 126:229-42, August 1947.

Bile Peritonitis in Infancy. F. Denis Hindmarsh, Royal Victoria Infirmary, Newcastel-upon-Tyne, England. Brit. M. J. 4516:131, July 26, 1947.

Acute Amoebiasis Complicating Cholecystectomy. Report of a Case. K. M.

Robertson, Royal Hants County Hospital, Winchester, England. Lancet 2:355-56, Sept. 6, 1947.

The Persistence of Symptoms Following Cholecystectomy. Nathan A. Womack and Russel L. Crider, Washington University School of Medicine and Barnes Hospital, St. Louis, Mo. Ann. Surg. 126:31-55, July 1947.

Acute Obstructive Cholecystitis Without Cholelithiasis. Paul Kiernan, Mayo Clinic, Rochester, Minn. S. Clin. North America 27:945-49, August 1947.

Wounds of the Liver. J. D. Martin, Jr., Emory University, Atlanta, Ga. Ann. Surg. 125:756-67, June 1947.

Retroperitoneal Lipoma. Richard B. Cattell and Kenneth W. Warren, Lahey Clinic, Boston, Mass. S. Clin. North America 27:659-65, June 1947.

Effect of Pentaerythtritetranitrate on Pain and Elevations of Serum Amylase and Bilirubin Induced by Simultaneous Injections of Morphine Hydrochloride and Secretin in Patients with Biliary Dyskinesia. Henrik O. Lagerlöf, St. Erik's Hospital, Stockholm, Sweden. Acta chir. Scandinav. 95:414-18, Fasc. 5, 1947.

Treatment of Biliary Tract Diseases in Elderly Patients. Albert Behrend, Philadelphia, Pa. Gastroenterology, 8:762-67, June 1947.

Pylephlebitis and Pyogenic Liver Abscess. Charles J. McGee, Walter S. Priest and Arnold Schimberg, Chicago, Ill. Am. J. Surg. 74:194-99, August 1947.

Empyema of the Gall-Bladder in a Child. S. C. Chen, Moukden Hospital, China. Brit. M. J. 4503:567, Apr. 26, 1947.

The Cystic Artery and Constituents of the Hepatic Pedicle. A Study of 500 Specimens. Edward H. Daseler, Barry J. Anson, William C. Hambley and Arthur F. Reimann, Northwestern Medical School, Chicago, Ill. Surg., Gynec. & Obst. 85:47-63, July 1947.

36. Pancreas

ONE STAGE PANCREATODUODENECTOMY.

Alexander Brunschwig, University of Chicago Medical School, Chicago, Ill. Surg., Gynec. & Obst. 85:161-64, August 1947.

This operation is generally used for the removal of cancer in the general pancreatoduodenal area requiring total resection of the duodenum, lower stomach and head of the pancreas. A series of 7 unselected cases on each of whom a pancreatoduodenectomy was done is reported. Primary growths of the head of the pancreas or ampulla were only present in 3 cases. Carcinoma of the lower pylorus and head of the pancreas existed in 2 cases and cancer of the second and third portions of the duodenum respectively and head of the pancreas but not the ampulla was present in the other 2 cases.

A single stage pancreatoduodenectomy without implantation of the

transected pancreatic neck in the jejunum was formerly done in these cases and was always followed by a pancreatic fistula which persisted for several months. Reimplantation of the neck of the pancreas into the jejunum eliminates this fistula and restores the pancreatic secretion to the intestine. Advances in surgical procedure have materially reduced the mortality of this operation. Prolonged survival of these cases depends upon early diagnosis and operation. There was no surgical mortality in these 7 cases. 3 references. 1 table. 3 figures.

References to Current Articles

Tumors of the Islets of Langerhans. Rudolfo Lopez-Kruger and Malcolm B. Dockerty, Mayo Clinic, Rochester, Minn. Surg., Gynec. & Obst. 85: 495-511, October 1947. In 10,514 routine autopsy studies of the pancreas 44 islet cell adenomas were found that had caused no symptoms. Pancreatic tumors causing hypoglycemia have been removed surgically in 38 cases in twenty years. The majority of these (70 per cent) were benign adenomas. Surgical procedures used vary from simple excision of an easily identified tumor to total pancreatectomy. 57 references. 2 tables. 10 figures.

Carcinoma of the Islets of Langerhans' with Hyperinsulinism. Report of a Case. Raphael Sanchez-Ubeda and Edward A. Carr, Jr., Rhode Island Hospital, Providence, R. I. New England J. Med. 237:87-91, July 17, 1947.

Pancreolithiasis and Chronic Pancreatitis. William Francis Rienhoff and Benjamin M. Baker, Johns Hopkins Hospital, Baltimore, Md. J. A. M. A. 134:20-21, May 3, 1947.

Post-traumatic Fistula of Pancreas Successfully Treated by Surgery. Geoffrey Flavell. Lancet 1:869-71, June 21, 1947.

Hypoglycaemia Due to Islet-Cell Adenoma of Pancreas Cured by Operation. B. L. Bishton and J. M. Malins, Birmingham United Hospital, Birmingham, England. Lancet 1:785-87, June 7, 1947.

Radical Operations on the Head of the Pancreas. William Barclay Parsons, Columbia University, Presbyterian Hospital and Vanderbilt Clinic, New York, N. Y. S. Clin. North America 27:401-10, April 1947.

Factors Influencing the Management of Pancreatic Cysts. R. Franklin Carter and Louis R. Slattery, New York Post-Graduate Medical School and Hospital, New York, N. Y. S. Clin. North America 27:411-16, April 1947.

Adenoma of the Islets of Langerhans' with Hypoglycemia. Report of Case with Five Year Cure. E. Rankin Denny, Harry D. Murdock and Leo Lowbeer, Tulsa, Okla. Gastroenterology 9:204-12, August 1947.

Anastomosis is of the Duct of Wirsung. Its Use in Palliative Operations for Cancer of the Head of the Pancreas. Richard B. Cattell, Lahey Clinic, Boston, Mass. S. Clin. North America 27:636-43, June 1947.

37. Spleen

References to Current Articles

The Role of Chronic Thrombosis of the Portal Vein and Its Tributaries in The Syndrome of Splenic Anemia. Mavis P. Kelsey, Harold E. Robertson and Herbert Z. Giffin, Mayo Clinic, Rochester, Minn. Surg., Gynec. & Obst. 85:289-93, September 1947. Presents a discussion of the causative factors in 61 cases of chronic disease of the portal veins; and the effect of chronic portal vein obstruction on the spleen in 44 of these cases. Concludes that chronic splenoportal thrombosis is one of the most common causes of splenic anemia. 17 references. 1 table.

Spontaneous Rupture of the Spleen Due to Infectious Mononucleosis. James M. Sullivan and Sidney E. Wasserman, Veterans Hospital and Marquette University School of Medicine, Wood, Wis. J. A. M. A. 134:144-45, May 10, 1947.

The Combined Thoracicoabdominal Approach with Particular Reference to its Employment in Splenectomy. Noland Carter, College of Medicine, University of Cincinnati, and the Cincinnati General Hospital, Cincinnati, Ohio. Surg., Gynec. & Obst. 84:1019-28, June 1947.

Indications for Splenectomy. John W. Norcross, Lahey Clinic, Boston, Mass. S. Clin. North America 27:616-20, June 1947.

38. Genito-Urinary Surgery

ON CONSERVATIVE SURGERY IN HYDRONEPHROSIS.

R. Brandburg and B. Köhler, The Söder Hospital, Sweden. Acta chir. Scandinav. 94:557-75, No. 6, 1946.

Conservative approach gave good results in 6 cases (1 bilateral hydronephrosis). In 5 of them this condition was caused by congenital folds and strictures at the ureteropelvic junction, which necessitated ureteropelveoplasty, including removal of the fibrous elements. In 1 case resection of the pelvis was done. In another case (hydronephrosis of the only remaining kidney) pyelonephritis complicated the disease, requiring pyelostomy and a nephrostomy tube. Excision of the cyst plus pyeloureteroplasty plus sulfathiazole postoperatively saved the kidney. The patient examined one and one-half years later was doing well, with normal urine and but slightly dilated pelvis. In another case of infection sulfonamide drugs made it possible, likewise, to dispense with the pyelostomy tube. Thus, in 5 cases of unilateral hydronephrosis the kidney function was restored. The size of the pelvis gradually decreased to nearly normal in 3 cases; in 1 case the pelvis remained unchanged, in another case it was slightly dilated. This condition, plus freedom from subjective symptoms and normal urine, were found in all 5 patients on follow-up examination three months to one and one-half years after operation. In the 1 case of bilateral hydronephrosis

pelvioureteroplasty had to be performed by frontal approach. The kidney function was not fully restored but urine was normal six months later. Subjective symptoms were absent, pelvis still slightly dilated. In all operations the incisions were closed by transverse sutures. 22 references. 6 figures.

FOUR CASES OF TUBERCULOSIS OF THE KIDNEY.

G. Söderlund, The Serafimer Hospital, Stockholm, Sweden. Acta chir. Scandinav. 94:470-82, No. 5, 1946.

The atypical cases described included:

1. Man, 42, operated on for hydronephrosis (left pyelolithotomy). The right half of the kidney was intact, but tuberculosis set in which necessitated another operation fourteen years later.

2. Girl, 20, severe tuberculosis of the left kidney and a few cavities in the right, possibly of identical nature. Sent home and readmitted two years later. It was found that the right kidney had healed spontaneously; the cavities were gone, the urine normal. The tuberculous kidney was removed. Cure.

3. Married woman, 45, grave tuberculosis of the right kidney, large hydronephrosis in the left. Nonprotein nitrogen 100 mg. per cent, the bladder shrunken. Treatment decreased the nonprotein nitrogen to 36 mg. per cent, the right kidney was removed and bladder dilated (100 cc.). Discharged in good condition.

4. Married woman, 35, periodic attacks of fever up to 40 C. for ten years. No local symptoms. Urography revealed no pathology in the urine or the urinary tract. Three years later another urography showed severe congestion of the left kidney (the upper pole). The kidney was dislocated laterally and downward. Nephrectomy disclosed a large cavity with pus from Bacillus coli. The pelvis was not involved. Tuberculosis was confirmed histologically. Cure.

VAGINAL CYSTECTOMY.

Victor F. Marshall and Morris Schnittman, Cornell University Medical College and New York and Memorial Hospitals, New York, N. Y. J. Urol. 57:848-57, May 1947.

An operation is described for removal of the bladder, urethra and anterior vaginal wall through the vagina in cases of vesical or urethral neoplasm. A uretero-intestinal anastomosis is done two to three weeks before the cystectomy. A 4 to 5 cm. long transverse incision is made through the vaginal wall approximately 2 cm. anterior to the cervix; variations in the size and shape of the vagina and the extent of the malignant disease may make some variation in this incision necessary. The cervix is separated from the bladder by blunt dissection with the finger. Parallel extensions from each end of the transverse incision are carried laterally and outward, thus

outlining a rectangular area in the anterior vagina. The next incision encircles the urethral meatus at a radius of at least 3 cm. which includes at least the upper half of each labium minus and some of the labia majora, and may include the clitoris. This incision is carried down to the periosteum of the pubis and its ends joined with the ends of the lateral vaginal incision. The upper portion of the mass to be removed is then separated from the periosteum until the pubic arch is visualized. An incision is made through the triangular ligament and the tissues of the space of Retzius dissected bluntly with the finger, keeping close to the periosteum; the lateral supports of the bladder are clamped and transfixed on each side and the ureters cut across. The peritoneum is identified and opened and separated from the bladder; the separation of the upper portions of the bladder from the peritoneum is the most difficult step of the operation. The peritoneum is closed with a continuous suture. Sutures of chromic catgut are placed in the neck of the cervix and into the periosteum and ligaments of the pubic arch to bring the uterus and cervix into the space occupied by the bladder. A rubber drain is placed on each side of the cervix into the retropubic space. The vaginal wall incisions are closed with catgut and the skin with silk. Perineal flushes are given daily.

With this operation, minor bleeding is controlled by packing, and bleeding vessels are ligated. A wider margin of tissue is obtained in lesions in the urethra, bladder neck and trigone, than with the usual cystectomy; and the tissue between the trigone, the vagina, the cervix and the lower ends of the ureters, which is richly lymphatic, is removed with the specimen.

Five cases are reported in which cystectomy was done by this method, and 1 other case in which the vaginal route was employed supplemented by a suprapubic incision for freeing the dome of the bladder, because, on account of previous suprapubic cystotomy for bladder tumor, it was adherent to the abdominal wall. There was little or no abdominal distention in the postoperative period; all but one of the 6 patients were able to take food by mouth on the first postoperative day; one had some postanesthesia nausea. The authors have done 2 additional vaginal cystectomies since this report was prepared without any postoperative complications. The first patient operated on was seen twelve months after operation and showed no evidence of carcinoma. 8 figures.

THE SURGICAL TREATMENT OF CARCINOMA OF THE BLADDER.

James T. Priestley, Mayo Clinic, Rochester, Minn. J. A. M. A. 134:507-13, June 7, 1947.

The factors to be considered in determining the best type of treatment for carcinoma of the bladder are discussed. Cancer in the other parts of the body is promptly and extensively removed as soon as discovered but an unwarranted conservatism apparently exists concerning malignancies of the bladder.

Whether transurethral or suprapubic operation is best must be decided for each patient. The former may be used for small, low grade, noninfiltrating and well differentiated lesions. The suprapubic approach is preferred for most patients however and especially in questionable or border line cases because there may be extensive invasion of the bladder wall without any visible evidence. Complete removal of the tumor and ultimate survival of the patient are the primary considerations in determining the operative procedure.

The suprapubic operations are described. Intraperitoneal exploration of the liver, periaortic and regional lymph nodes and bladder should be done before the tumor is operated as the proper surgical procedure cannot be determined without this information. The peritoneal incision is closed and protected by a moist pack before the bladder operation is performed. This procedure has apparently not increased the surgical risk. The usual suprapubic procedures are segmental resection; excision and fulguration with or without simultaneous radon implantation, and total cystectomy. Segmental resection is not difficult if the base of the bladder is not involved and is quite satisfactory in selected cases. Suprapubic excision and fulguration is usually reserved for lesions involving the base of the bladder and one or both ureteral orifies. Total cystectomy has carried a high mortality or been followed by unsatisfactory late results so that it has not been popular. This has been caused by many factors which are discussed and can now be eliminated. The operation is being re-evaluated and used more frequently. Bilateral ureterosigmoidostomy is the preferred operation for urinary diversion in connection with total cystectomy. The technic for ureteral transplantation and complete resection of the bladder is described. The operation was formerly done in two stages but the author and his colleagues have obtained favorable results with a single stage operation during recent years. 1 reference. 2 tables. 1 figure.

INFILTRATING CARCINOMA OF THE BLADDER.

Hugh J. Jewett, Johns Hopkins Hospital, Baltimore, Md. J. A. M. A. 134:496-500, June 7, 1947.

Failure to cure infiltrating carcinoma of the bladder is largely dependent upon previous metastasis and extravesical extension, incomplete removal of the primary growth and complications. Metastasis and extravesical extension must be excluded before treatment can be porperly evaluated. This can usually be done by the clinical application of recent pathologic observations to individual patients. Studies were made of autopsies of 107 cases of infiltrating carcinoma of the bladder to ascertain conditions under which metastasis and extravesical extension occur. The cases were divided into three groups, the tumor being limited to the submucosa in the first, extended into the muscularis in the second and entirely through the muscularis in the third. Histologic examination showed that these tumors could be classified as papillary, epidermoid and undifferentiated carcino-

mas. This histologic appearance did not indicate the presence or absence of metastasis but classification of the tumor is important because, when the tumor is deeply infiltrating, metastasis occurs in practically all undifferentiated carcinomas, about three-fourths of the poorly differentiated epidermoid tumors and about half the papillary carcinomas. The fact that a tumor of the bladder exists is insufficient information for the clinical application of this pathologic information however. A complete diagnosis is essential.

Late diagnosis is one of the two major reasons for the low curability of these tumors, the other being inadequate treatment. Early diagnosis will be made more frequently in these cases if the great importance of slight hematuria and irritability of the bladder, especially in patients over 40 years old is fully appreciated. Cystoscopy, biopsy and bimanual palpation are essential procedures for a complete diagnosis. The first shows the presence of tumor and the gross characteristics of the visualized portion. There may be associated edema, ulceration, necrosis or hemorrhage. A properly taken biopsy specimen establishes the diagnosis in uncertain cases. It should be taken under anesthesia and from immediately beneath the base of the pedicle in pedunculated tumors, as a superficial piece may lead to an improper diagnosis of benign tumor. Some muscularis should be included to determine the presence of infiltration and the diagnosis. Accurate palpation will determine the amount of penetration of the bladder wall. Over 80 per cent of deeply infiltrating tumors cause a hard, stony induration which is practically never found with superficially infiltrating tumors. A recto-abdominal examination under anesthesia is necessary in the male.

Extravesical extension is recognized easily and indicates incurability. Stony induration with no signs of extravesical extension indicates metastasis in all undifferentiated tumors and most of the poorly differentiated. A rubbery induration without extravesical extension indicates probably a somewhat lower incidence of metastasis. No metastasis and a good prognosis are indicated when no palpable induration is found with the patient under good anesthesia. The tumor must be completely removed and recurrences treated early and adequately to obtain a cure. Estimation of the gross pathologic condition is completed by excretory urography, roentgenograms of the chest, spine and pelvis and examination of the regional lymph nodes and liver at operation. 5 references. 4 tables. 3 figures.

HEMOGLOBINEMIA ACCOMPANYING TRANSURETHRAL RESECTION OF THE PROSTATE.

Ernest K. Landsteiner and Clement A. Finch, Peter Bent Brigham Hospital, Boston, Mass. New England J. Med. 237:310-12, Aug. 28, 1947.

Modern methods have enabled transurethral prostatectomy to be safely performed more frequently. A temporary oliguria or even anuria, however, sometimes occurs. A fatal case of renal failure occurring after transurethral prostatectomy is discussed. Death was the result of massive intravascular hemolysis which developed during the operation.

Hemolysis frequently occurs during transurethral prostatectomy and is apparently a result of distilled water used for irrigations entering the blood stream through the open veins of the prostatic capsule when the water pressure exceeds the venous. In order to investigate this possibility, 1 Gm. per liter of sodium salicylate was added to the distilled water used for irrigation during the resection, small amounts of this substance being easily detected in the blood and not affecting the action of the resectoscope. Sodium salicylate blood levels to be anticipated were previously determined. The effect of distilled water upon the blood stream was tested by intravenous injections of distilled water into several patients at different speeds and in amounts from 100 to 900 cc. Hemolysis was produced in each case but there was no evidence of renal dysfunction afterwards. These experiments indicated that intravenous injections of at least 500 cc. of distilled water were necessary to cause hemoglobinuria in man. The renal damage following hemolysis during transurethral prostatic resection is presumably the same as other forms of hemoglobinuric nephrosis but the pathology of renal failure in these cases is not well understood. Hemoglobinemia is not the only cause because intravenous injections of similar amounts of distilled water and the production of similar hemolysis have not caused renal damage. It is believed that blood loss and renal ischemia play an important part in causing the renal pathology.

This hemolysis may be prevented by using as little irrigating fluid as consistent with clear vision and under as low pressure as possible. Physiologic saline solution cannot be used for irrigation as it impairs the cutting current of the resectoscope. Glucose solutions are unsatisfactory for irrigation purposes because they obscure vision. 9 references. 2 tables. 1 figure.

(*An important menace to look out for.*—ED).

SOME OBSERVATIONS ON TRANSURETHRAL PROSTATIC RESECTIONS.

Reed M. Nesbit, University of Michigan Medical School, Ann Arbor, Mich. New England J. Med. 237:207-12, Aug. 14, 1947.

Certain technical details necessary for the successful performance of a transurethral prostatic resection are discussed. Most complications of resection are the result of urethral trauma and hemorrhage. All urethras do not easily accommodate the resectoscope and some serious results follow the use of instruments that are too large. This trauma may be avoided by passing a No. 30Fr. sound first and not using a standardized resectoscope unless this sound is readily accommodated. Meatotomy may permit passage of the standard instrument but if the urethra is too small, a No. 24 Fr. resectoscope may be used or perineal urethrotomy done. Perineal urethrotomy is also indicated by a severe urethritis, a short penile suspensory ligament, unusually long prostatic urethra or an abnormally placed prostate. A short suspensory ligament impedes passage of a straight instrument through the anterior urethra and causes serious trauma at the penoscrotal angle if the

instrument is forcefully inserted. It is axiomatic that the resectoscope always must be able to move freely and easily in the urethra. Other traumatic injuries are caused by cutting too deeply and perforating the prostatic capsule or injuring the external urinary sphincter with resulting possibly fatal pelvic cellulitis and extravasation. Urinary incontinence follows cutting the external sphincter with the resectoscope. This accident may be easily avoided by the average operator. The membranous urethra is immobile but the adjacent prostatic urethra is slightly movable. The mucosa at the prostatomembranous junction becomes transversely wrinkled like a bellows around its entire circumference when the prostate is moved. These folds are easily recognized through the resectoscope so that the prostatomembranous junction can always be recognized and tissue excised that far without endangering the sphincter.

Hemorrhage may be excessive or slight. Accurate information concerning the amount of blood lost is important, impressions during the operation being undependable. The Nesbit and Conger procedure only requires a few minutes and provides accurate information concerning the need of blood replacement. Observance of certain technical operative details will materially aid in controlling hemorrhage during operation. Bleeders are difficult to recognize when the wall of the prostatic fossa is rough and irregular. The bleeding may be easily found and stopped by using long, continuous sweeps of the cutting loop to eliminate the peaks and furrows. Each trip of the cutting loop should extend the entire length of the growth being removed. It is important that the tissue being traversed always be kept directly visible so that the sheath and cutting loop may be properly handled. Injection of vasoconstrictive substances into the prostate to diminish operative bleeding is not recommended because serious vasodilatation and hemorrhage may occur after the vasoconstriction disappears. Experience has shown that the best results in control of postoperative bleeding are obtained by not using either irrigations or thrombin after operation.

The operative technic of transurethral prostatic resection is described. Recognition of tissue morphology during operation is important in order to know what not to excise. A systematic approach enables subtotal removal of the gland, the amount removed largely depending upon the dexterity and experience of the operator. Cure depends upon extirpation of the prostate gland. Subtotal resection is essential for good results but if this cannot be done, such enucleative procedure as is practicable should be performed. 5 references. 4 figures.

MALIGNANCY OF THE KIDNEY. SURVEY OF 195 CASES.

Albert P. Graham, Neenah, Wis. J. Urol. 58:10-21, July 1947.

Between Jan. 1, 1931 and Jan. 1, 1945, 195 cases of malignancy of the kidney were seen at the Edward Hines, Jr. Memorial Hospital. Of these, 60 cases were operated on at this hospital; 23 were operated on elsewhere and admitted at Hines Hospital for postoperative roentgen therapy; 70

were found, during the first examination, to have metastases; 16 were undiagnosed despite genito-urinary study; 26 unsuspected cases were discovered at autopsy. Hematuria was the most common initial symptom (31 per cent), while the most common clinical findings were a palpable mass (41 per cent) and blood in the urine (33 per cent). Retrograde pyelography provided the diagnosis in 66 per cent; intravenous pyelography was diagnostic in only 16 per cent. Eighty-six per cent of the tumors were cortical in origin and the remainder arose from the renal pelvis. Although the squamous cell tumors did not metastasize the transitional cell tumor metastasized to numerous organs and structures. Thirty-six per cent showed metastases, most commonly to the lung (48 per cent), at the first examination. In the bony structure metastases were most prevalent in the spine, ribs and pelvis.

Eighty-one cases (41 per cent) were found to be inoperable on the first admission and only 77 (35 per cent) finally had nephrectomy. These figures show the result of late diagnosis. Forty-two patients who underwent nephrectomy survived for an average of twenty-three months postoperatively. Twenty-six per cent lived from one to two years, while 38 per cent lived less than one year. The high operative mortality, 11 per cent in 60 cases, was primarily due to the fact that many of these cases were difficult ones which had been transferred from other hospitals. Preoperative irradiation produced a diminution in the size of the tumor in 5 out of 15 cases. These 5 cases received 4,000 to 6,000 roentgens. All 44 inoperable cases which received irradiation died within one year and four months (average survival five months). There are now three year cures in 28 per cent of the cases; five year cures in 17 per cent; and ten year cures in 14 per cent. Since the average patient delays examination about one year and eight months after the onset of the initial symptom education of the public and profession in the importance of immediate and proper investigation of hematuria is essential and would enhance the chances for a cure in at least one-third of the cases. 4 references, 8 figures.

ENDOCRINE THERAPY IN CARCINOMA OF THE PROSTATE. PREPARATION OF PATIENTS FOR RADICAL PERINEAL PROSTATECTOMY.

J. A. Campbell Colston and Herbert Brendler, Johns Hopkins Hospital, Baltimore, Md. J. A. M. A. 134:848-53, July 5, 1947.

Following the administration of diethylstilbestrol in cases of prostatic carcinoma, objective regression of the primary growth in about 75 per cent of the cases and of its metastases in about 45 per cent of the cases, may be expected according to the experience gained in treating 200 cases of prostatic carcinoma at the Brady Urological Institute and an extensive review of statistics. Clinically, there is a generalized softening and a shrinkage of the primary tumor, the variability in change probably being related to the histologic pattern. Serial examinations of estrogen treated patients who are in moderately advanced states (spread of the growth into the bases of

the seminal vesicles and/or the apex of the gland) suggest that since the earliest signs of regression appear in the periphery of the tumor (recession out of the bases of the seminal vesicles and the apex), the marginal cells may be more actively growing and therefore, reflect the effects of androgen deprivation more acutely. This regression makes feasible the undertaking of radical perineal prostatectomy, provided the following clinical criteria are met: on rectal examination the growth must not extend beyond the capsule into the bases of the seminal vesicles or into the membranous urethral region and the prostate must be freely movable; there must be no demonstrable metastatic extension (acid phosphatase levels are often normal despite extensive metastases); and the patient should have a reasonable life expectancy from the standpoint of age and he should be a good surgical risk.

Seven of the aforementioned 200 prostatic cancer cases treated with diethylstilbestrol, in all of which the initial examination ruled out the justification of radical extirpation, were classified as moderately advanced cases. A preoperative course of diethylstilbestrol, 1 to 2 mg. daily for varying periods, caused regression sufficient to make these patients suitable candidates for radical perineal prostatectomy (several other patients responded similarly but other conditions contraindicated radical surgery). The rapidity or degree of regression did not appear to be essentially affected by the larger dose of diethylstilbestrol. Untoward effects were confined to slight swelling and tenderness of the nipples. Although there was no operative mortality in this series of 7 cases, complications resulting from stricture formation at the site of the anastomosis developed in 2 instances. Recurrence and metastases caused the death of 1 man a year after operation. Since all patients have been operated on during the past two years, this paper is not intended to represent a study of ultimate mortality. In view of the favorable results obtained with endocrine therapy, the institution of such therapy seems advisable for all cases of prostatic carcinoma, including those which meet the criteria for radical operation. The 7 case reports are presented in some detail. 10 references. 2 figures.

References to Current Articles

Intradermal Test for Sensitivity to Iodopyracet Injection, or "Diodrast." E. P. Alyea and C. E. Haines, Duke University School of Medicine and Duke Hospital, Durham, N. C. J. A. M. A. 135:25-27, Sept. 6, 1947.

Review of Urologic Surgery. Albert J. Scholl, Los Angeles, Frank Hinman, San Francisco, Calif., Alexander B. Hepler, Seattle, Wash., Robert Gutierrez, New York, N. Y., Gershom J. Thompson, Edward N. Cook, Rochester, Minn., John F. Flynn, Los Angeles, Calif. and Vincent J. O'Conor, Chicago, Ill. Arch. Surg. 54:701-32, June 1947.

Care of the Cutaneous Ureterostomy. A New Apparatus. Howard M. Trafton and Manuel Kaufman, The Lahey Clinic, Boston, Mass. J. Urol. A.U.S.). J. Urol. 58:137-39, August 1947.

A Report on the Incidence of Urinary Lithiasis in the Canal Zone. Merrill H. Judd (Lt. Col., M.C., A.U.S.) and Ward C. Meyers, (Capt., M.C., A.U.S.). J. Urol 58:137-39, August 1947.

Case Report of Avulsion of the Male External Genitalia. A. A. Williams, M. Walker and O. D. Chambers, Meharry Hubbard Hospital, Nashville, Tenn. J. Urol. 58:140-42, August 1947.

The Determination of Phenolsulphonphthalein with the Photoelectric Colorimeter and Its Application to the "Phthalein Elimination Curve." Peter L. Scardino and William Wallace Scott, Johns Hopkins Hospital, Baltimore, Md. 58:143-150, J. Urol. August 1947.

Clinical Use of the Sodium Thiosulfate (Nyiri) Test, Compared with the Phenolsulphonphthalein Test. Willard E. Goodwin, Johns Hopkins Hospital, Baltimore, Md. J. Urol. 58:151-58, August 1947.

Endocrinologic Studies on the Prostate Gland in the Male Rabbit. II. The Response of Intraocular Prostatic Implants to Estrogens in the Completely Prostatectomized Animal, Intact and Castrate. Boris Krichesky, University of California, Los Angeles, Calif. and John A. Benjamin, University of Rochester School of Medicine, Rochester, N. Y. J. Urol. 58:114-24, August 1947.

Hemolytic Reactions During Transurethral Prostatic Resection. C. D. Creevy, University of Minnesota, Minneapolis, Minn. J. Urol. 58:125-31, August 1947.

Calcification of the Seminal Vesicles. Case Report. John D. Shea (Lt. Col., M.C., A.U.S.) and Jack W. Schwartz (Lt. Col., M.C., A.U.S.), Letterman General Hospital, San Francisco, Calif. J. Urol. 58:132-33, August 1947.

Mullerian Duct Cyst. L. R. Culbertson, University of Virginia Hospital, Charlottesville, Va. J. Urol. 58:134-36, August 1947.

Carcinoma of the Prostate Archie L. Dean, Memorial Hospital, New York, N. Y. Bull. New York Acad. Med. 23:454-71, August 1947.

Clinical Manifestations of Adrenal Cortical Hyperfunction. Louis J. Soffer, The Mount Sinai Hospital, New York, N. Y. Bull. New York Acad. Med. 23:479-93, August 1947.

The Obstructive Prostrate. Frank Hinman, San Francisco, Calif. J. A. M. A. 135:136-41, Sept. 20, 1947.

Perinephric Abscess Treated with Sulfadiazine and Penicillin. J. Shafar and J. Garber, Lennox Castle E.M.S. Hospital, Glasgow, Scotland. Lancet 2:279-80, Aug. 23, 1947.

Endoscopic Treatment of Tumors of the Bladder. Harold P. McDonald, Alexander J. Filip and David C. Williams, Atlanta, Ga. J. A. M. A. 134:500-501, June 7, 1947.

Primary Carcinoma of the Male Urethra. Jerry Zaslow and James T. Priestley, Mayo Clinic, Rochester, Minn. J. Urol. 58:207-10, September 1947.

The Isolation of a Filterable Agent Pathogenic for Mice from a Case of Reiter's Disease. Jack Dunham, University of California, Los Angeles,

and Joe Rock and Elmer Belt, Veteran's Administration Facility, Sawtelle, Calif. J. Urol. 58:212-15, September 1947.

The Use of Antispasmodic Drugs as Preparation for Intravenous Pyelography. Paul Singer, Phoenix, Ariz. J. Urol. 58:216, September 1947.

A New Infant Cystoscope. Lowrain E. McCrea, Philadelphia, Pa. J. Urol. 58:217-19, September 1947.

A Comparison of Radiation and Surgery for Cancer of the Bladder. Victor F. Marshall, Cornell University Medical College, Memorial and New York Hospitals, New York, N. Y. J. A. M. A. 134:501-507, June 7, 1947.

Pyrexia with Hypernephroma. Report of Two Cases. C. H. Catlin, E. W. Bintcliffe and F. G. Marson, Ronkswood Hospital, Worcester, and General Hospital, Birmingham, England. Lancet 2:170-71, Aug. 2, 1947. 1 figure.

Treatment of Prostatic Cancer. With *l*-Bromo-Triphenylethylene (459). M. Berger and Ng. Ph. Buu-Hoi, University of Paris, Paris, France. Lancet 2:172-73, Aug. 2, 1947. 11 references.

Treatment of Ruptured Urethra by Bladder Traction. Peter Martin, Chelmsford and Essex Hospitals, Cambridge, England. Lancet 1:743-44, May 31, 1947.

Treatment of the Bladder After Suprapubic Cystostomy. P. W. Nathan, London, England. Lancet 2:47-49, July 12, 1947.

Treatment of Prostate Cancers. with Synestrol Preliminary Communication. (*Lechenie rakov predstatel'noĭ zhelezy Sinestrolom. Predvaritel'noe soobshchenie*). A. B. Topchan and A. A. Pomerantsev, The 2nd Medical Institute of Moscow, U.S.S.R. Khirurgiya No. 4, 53-56, 1947.

Operation in Edemas of the Testicle and Congenital Hernias, With Enveloping of the Testicle in the *Tunica vaginalis propria* Turned Inside-Out (*Operatsiya pri vodyanke yaichka i vrozhdennykh gryzhakh s okutyvaniem yaichka vvvernutoĭ narczhnoĭ obolochkoĭ*). N. V. Voskresenskiĭ, U. S. S. R. Khirurgiya No. 2, 87-89, 1947.

New Principle in Reconstruction of the Male Genital Organ (*Novyĭ printsip vosstanovleniya muzhskogo polovogo chlena*). V. S. Mavat, The Moscow Medical Institute, U. S. S. R. Khirurgiya No. 2, 85-87, 1947.

Double Kidney Pelves and Double Ureters, Upper Ureter Ending Ectopically At Vestibule of Vagina. Case Report. Luis F. Torres, Jr., University of the Philippines College of Medicine, Manila, P. I. J. Urol. 58:171-75, September 1947.

Primary Carcinoma of the Ureter. Presentation of a Case. J. Mason Hundley, Jr. and James S. Hunter, Jr., University of Maryland School of Medicine, Baltimore, Md. J. Urol. 58:176-81, September 1947.

The Use of a New Viscous Water-Miscible Contrast Medium Rayopake for Cystourethrography. M. Leopold Brodny and Samuel A. Robins, Tufts College Medical School, Boston, Mass. J. Urol. 58:182-84, September 1947.

Visco-Rayopake in Cystourethrography. Charles E. Richards, Duke University School of Medicine and Duke Hospital, Durham, N. C. J. Urol. 58:185-91, September 1947.

Primary Carcinoma of the Male Urethra. Report of Ten Cases. William E. Lower, and K. F. Hausfeld, Cleveland Clinic, Cleveland, Ohio. J. Urol. 58:192-206, September 1947.

Primary Carcinoma of the Ureter. Frederick Pilcher, Calgary, Alta., Canada. Canad. M. A. J. 57:240-43, September 1947.

Urinary Tract Calculi. H. Ostry, Colonel Belcher Hospital, Calgary, Alta. Canada. Canad. M. A. J. 57:266-70, September 1947.

Radical Perineal Prostatectomy For Carcinoma of the Prostate. C. Agnew Cawker, Vancouver, B. C., Canada. Canad. M. A. J. 57:276-81, September 1947.

Benign Fibromucous Polyp of the Ureter. Report of a Case. James K. Palmer and Laurence F. Greene, Mayo Foundation, Rochester, Minn. Surgery 22:562-65, September 1947.

Misconception of the Gubernaculum Testis. L. J. Wells and David State, University of Minnesota School of Medicine, Minneapolis, Minn. Surgery 22:502-508, September 1947.

Injuries Involving the Genitourinary Tract. Walton K. Rexford, Detroit, Mich. Am. J. Surg. 74:350-58, September 1947.

On Complete Removal of the Prostate. A Preliminary Communication. H. S. Souttar. Brit. M. J. 4512:917-18, June 28, 1947.

Torsion of the Spermatic Cord. Donald S. Jurnove, Metropolitan Hospital, New York, N. Y. Am. J. Surg. 74:90-95, July 1947.

Leiomyoma of the Kidney. I. Charles Zuckerman, David Kershner, Bernard D. Laytner and Daniel Hirschl, Beth El Hospital, Brooklyn, N. Y. Ann. Surg. 126:220-28, August 1947.

Unusual Foreign Body Ulcerating into Bladder from the Bowel. Samuel Baron and Harold Lipshutz, Jewish Hospital, Philadelphia, Pa. J. Urol. 58:112-13, August 1947.

Penicillin as an Aid in Prostatectomy. J. G. Yates Bell, King's College Hospital, London, England. Lancet 2:347-50, Sept. 6, 1947.

Flushing Catheter for Use After Retropubic Prostatectomy. E. G. Tuckwell, London, England. Lancet 2:94, July 19, 1947.

Diagnosis and Management of Renal-Artery Thrombosis. Report of a Case. William E. Goodyear and Donald E. Beard. Emory University School of Medicine and Grady Memorial Hospital, Atlanta, Ga. New England J. Med. 237:355-58, Sept. 4, 1947.

Bladder Tumors, a Review of 47 Cases. William Baurys and John M. McGrath, Guthrie Clinic, and the Robert Packer Hospital, Sayre, Pa. Guthrie Clin. Bull. 17:37-41, July 1947.

Late Results of Ureteroenterostomy. George Gilbert Smith, American College of Surgeons, Providence, R. I. Surg., Gynec. & Obst. 85:221-27, August 1947.

Transurethral Resection in the Treatment of Vesical Dysfunction Secondary

to Inflammatory, Degenerative and Traumatic Lesions of the Spinal Cord. John L. Emmett and J. E. Bisquertt, Mayo Clinic, Rochester, Minn. S. Clin. North America 27:950-77, August 1947.

Rhabdomyosarcoma Causing Acute Retention in Infants. Ellison Minchin, Royal Perth Hospital, Western Australia. Brit. M. J. 4515:94-95, July 19, 1947.

Bilateral Cutaneous Ureterostomy Eighteen Years after Ureterosigmoidostomy for Extrophy of the Bladder. Edgar Burns, W. F. Kittredge and Jack Hyman, Tulane University School of Medicine and Ochsner Clinic, New Orleans, La. Ann. Surg. 125:788-97, June 1947.

Total Cystectomy for Carcinoma of the Bladder. Earl E. Ewert, Lahey Clinic, Boston, Mass. S. Clin. North America 27:714-16, June 1947.

Malignant Disease in the Undescended Testis. Oscar B. Murray and Earl E. Ewert, Lahey Clinic, Boston, Mass. S. Clin. North America 27: 709-13, June 1947.

Some Penile Lesions and Carcinoma of the Penis. Vernon S. Dick, Lahey Clinic, Boston, Mass. S Clin. North America 27:714-16, June 1947.

Crossed Ectopia with Fusion. Review of Literature and a Report of Four Cases. Benjamin S. Abeshouse, Sinai Hospital, Baltimore, Md. Am. J. Surg. 73:658-83, June 1947.

Mortality in Benign Prostatic Obstruction. S. A. MacDonald, Montreal General Hospital, Montreal, Que., Canada. Canad. M. A. J. 57:148-52, August 1947.

Medullary Suprarenal Chromaffinoma Producing Malignant Hypertension. David Gutmann, Lister Emergency Hospital, Hitchin, Herts, England. Brit. M. J. 4504:563-64, Apr. 26, 1947.

A Case of Phaeochromocytoma. J. M. K. Spalding, Sutton Emergency Hospital, England. Brit. M. J. 4505:564-65, Apr. 26, 1947.

Seminal Fluid Acid Phosphatase in Sterility. G. E. Delory, Royal Infirmary, Preston, England. Brit. M. J. 4503:566-67, Apr. 26, 1947.

Rupture of Urinary Bladder. Avulsion of Vesical Neck. Charles D. Donahue, Central Willamette Medical Society, Eugene, Ore. Northwest Med. 46:605-11, August 1947.

Streptomycin Therapy in Urinary Tract Infections. Edwin J. Pulaski (Major, M.C., A.U.S.) and William H. Amspacher (Col., M.C., A.U.S.), Army Medical Research and Development Board, Office of The Surgeon General, Fort Sam Houston, Tex. Surg., Gynec. & Obst. 85:107-112, July 1947.

39. Gynecologic Surgery

THE SURGICAL TREATMENT OF URINARY INCONTINENCE.

Marshall K. Bartlett, Massachusetts General Hospital, Boston, Mass.
New England J. Med. 236:965-69, June 26, 1947.

Certain basic anatomic facts in connection with the mechanism of urinary control in women are necessary for the understanding of urinary incontinence. The internal sphincter is in the bladder neck, is involuntary, and normally keeps the bladder orifice closed. The urethral sphincter is voluntary and located between the two fascial layers of the urogenital diaphragm. When a patient with stress incontinence is in the lithotomy positon, the urethra and neck of the bladder fall away from the pubic arch so that the urethra is almost vertical instead of horizontal and the urethral sphincter mechanism is impeded. This is not normally required to prevent involuntary escape of urine from the bladder even under increased pressure. Stress incontinence occurs when the bladder neck and adjoining urethra are so stretched by falling away from the pubic arch that the internal sphincter becomes ineffective. Successful surgical treatment depends upon restoration of the normal anatomic relations.

There are three general types of surgical repair for this condition. The first attempts to reconstruct the existing tissues of the urethra or bladder neck. The second utilizes various muscle or fascial transplants. The third uses the transvesical approach to repair the mechanism of the internal sphincter at the bladder neck.

Results obtained in 63 operations for stress incontinence are presented. The Kennedy technic was followed in the first 42 cases with 29 cures. Stripping the lateral attachments of the urethra from the pubic rami was abandoned because of possible severe hemorrhage from veins about the bladder neck. In addition, the pelvic fascia and urogenital diaphragm are normally attached to these lateral attachments and their loss prevents proper replacement of the urethra and bladder neck. In the remaining 21 cases, the vaginal mucosa was elevated from the urethra and neck of the bladder and the pelvic fascia and urogenital diaphragm plicated over them so that the bladder neck and urethra were supported beneath and held up behind the pubic arch. Cures resulted in 15 cases. The suture material seemed to make little difference but catgut was preferred because the increased inflammatory reaction following its use causes the formation of more scar tissue. Perineal repair was also done to approximate the levator ani muscles and provide better pelvic support. Urethrovaginal fistulas requiring repair developed in 3 cases. It was thought that these were caused by anchoring the mucosa to the underlying layer in completing the closure. This step has been abandoned. 18 references. 6 figures.

EXPERIMENTS WITH p-AMINOBENZENESULFONAMIDE IN THE PROPHYLAXIS OF INFECTIONS ARISING DURING BRACHYRADIUM THERAPY OF CERVIX CARCINOMA (*Über Versuche mit p-Aminobenzolsulfonamid bei der Infektionspophylaxe der Brachyradiumtherapie des Zervixkarzinoms*).

V. Kahanpaa, The Central Institute of Radiotherapy, Helsinki, Finland. Ann. chir. et gynaec. Fenniae 35:86-93, No. 1, 1946.

The danger of inflammation resulting from brachyradium therapy of cervix carcinoma was found statistically greater than the danger of hemorrhages, thrombosis, embolism or urethra and bladder dysfunctions. Parametritis is the most frequent infection, with pyometra following closely. Prophylaxis includes auto vaccines, washing of the vagina with antiseptic solutions, etc. The author had administered prophylactically 1.0 g. of p-aminobenzenesulfonamide, in tablets, for twenty-four hours before, during, and for twenty-four hours after therapy, three times a day. Locally the powder was applied in the cervical canal. Comparison of 128 experimental and 190 control cases (the latter patients were given radium treatment without the sulfonamide drug) showed that in nearly half of each group subfebrile temperatures had lasted one to two days. In 14.8 per cent of the experimental group the fever rose at least once above 38 C. Mortality from sepsis or any other infection was zero. It is seen that morbidity was the same in both groups, hence some better prophylactic medication must be sought. 17 references.

SURGICAL CURE OF URINARY INCONTINENCE IN WOMEN.

R. W. Te Linde, Johns Hopkins Hospital and University, Baltimore, Md. Ann. Surg. 126:64-97, July 1947.

Experience has shown that most cases of urinary incontinence are curable surgically but certain surgical principles must be followed. The 6 usual types of urinary incontinence are briefly summarized. They are stress incontinence, vesicovaginal fistulae, defects of the urethra or sphincters, incontinence caused by neurologic disease, ureterovaginal fistula and inflammatory lesions of the urinary tract.

Stress incontinence is more frequent than all other forms combined. It may result from cystocele, uterine prolapse or periurethral adhesions caused by the trauma of vaginal deliveries and unsuccessful vaginal plastic operations. The operation for its cure is described. It consists of plicating the musculature the entire length of the urethra and the area of the internal sphincter with plication of the pubovesicocervical fascia in the midline to form a bed for the urethra and base of the bladder. An indwelling catheter is not used in order not to hold the urethra open, repeated catheterization being done if necessary. In a series of 249 such operations, 90.3 per cent reported themselves cured, 5 per cent improved and 3.5 per cent unimproved.

Excessive periurethral scar tissue makes further plications useless

and a muscle transplant is done. The Aldridge modification of the Goebell-Frangenhein-Stoeckel operation is preferred. Cases must be carefully selected however and restricted to those without voluntary sphincter control and with a relaxed involuntary sphincter. The operation is described. Positon of the table is important, a modified lithotomy position being used with the thighs not acutely flexed on the abdomen so that redraping will not be required. Digital dissection lateral to the urethra is not done in the vaginal part of the operation because it is considered unnecessary and productive of much bleeding. Instead, the fascial strip on each side is drawn down by a clamp, overlapped and sutured beneath the urethra, care being taken to provide proper tension on them to insure continence.

Total abdominal hysterectomy is responsible for most cases of vesicovaginal fistula. The principles of surgical cure are discussed as operative details must be settled for each case. An interval of five or six months should elapse between the occurrence of a fistula and its surgical correction in order that all edema and infection may completely subside. The vaginal approach is preferred, even for a high postoperative fistula unless it is inaccessible from below because of previous operations. Closure of these high fistulae is most important and comparatively simple by the Latzko method. The operation is described. The tightness of bladder closure is tested with a weak sterile milk solution which is much better than methylene blue because it is more clearly seen and does not stain the tissues. When only a single layer of sutures can be used or when a little extra tension results from previous scar formation, No. 26 silver wire is much the best suture material as it is extremely resistant to infection. Postoperative bladder drainage is essential. An indwelling catheter is preferred to repeated catheterization if the patient cannot void. Rest in bed for two weeks is advisable in difficult cases. Double drainage is desirable during this period in order to assure drainage by one route or the other. A vaginal cystotomy with insertion of a mushroom catheter is done if there is space above the trigone. Otherwise, a suprapubic cystotomy is necessary. Patency of the catheters must be tested daily. About 90 per cent of these fistulae are closed by following these principles.

Ureterovaginal fistulae usually follow surgical damage to the ureter. A six weeks' delay is desirable before operating but scar tissue formation about the ureter during this period may cause a back pressure which will destroy kidney function or pyelitis may result from faulty drainage. A temporary nephrostomy is preferable if immediate surgery is necessary. Ureterovesical anastomosis is preferred to ureteroureteral if practicable as it is easier and has a better chance of success. A catheter should be placed in the lower ureter preoperatively to aid in identification. The implantation operation is described. A ureteral catheter is left in place for about ten days with both operations. A rubber urethral catheter is also left in the bladder and both catheters watched to insure patency. Chemotherapy and forced fluids are given. 25 references. 2 tables. 14 figures.

CESAREAN HYSTERECTOMY.

Ralph A. Reis and Edwin J. DeCosta, Michael Reese Hospital, Chicago, Ill. J. A. M. A. 134:775-79, June 28, 1947.

The history and present status of cesarean hysterectomy are reviewed. The overall statistics for the period of 1931 to 1945 show a reported total of 636 cases of cesarean hysterectomy with a maternal mortality of 5.2 per cent. During the period 1933 to 1945 a total of 54 cesarean hysterectomies were performed at the Michael Reese Hospital with no deaths. The indications for this operation now include many conditions for which hysterectomy is considered desirable or necessary.

Cesarean hysterectomy may be elective or nonelective, removal of the uterus being anticipated before operation in the former and found necessary during a cesarean section in the latter. The elective operation is usually easier to do than an average abdominal hysterectomy because of the greater uterine mobility. The usual laparotrachelotomy is done in each type but a transverse incision is made in the lower uterine segment in the elective operation instead of the longitudinal incision usually used in the section. The baby is delivered through the transverse incision, the cord ligated and the placenta left in place. The usual hysterectomy procedure is then carried out, the transverse uterine incision being carried posteriorly and the uterus amputated. In the nonelective hysterectomy, amputation of the uterus is begun at the junction of the middle and lower third of the longitudinal uterine incision. This makes it necessary to suture the lower part of the longitudinal uterine incision before the transversely sectioned uterine stump can be approximated. Cesarean hysterectomy is most often done for fibroids with pregnancy, antepartum hemorrhages, uncontrollable uterine bleeding during a cesarean section or intrapartum infection. The last is the original cause for this operation but now is probably the least frequent indication. 23 references. 3 tables.

CARCINOMA OF THE UTERUS.

James C. Masson, Mayo Clinic, Rocvhester, Minn. S. Clin. North America 27:763-74, August 1947.

Early diagnosis and modern treatment offer the only hope of decreasing the incidence of this disease. Experience has shown that determination of the degree of malignancy is of real prognostic value. The earliest symptom is usually an irregular spotting of blood between regular periods or after the menopause but cancer may be present without symptoms indicating malignancy.

Any suspected case should be given a thorough preoperative preparation, a specimen of tissue removed under anesthesia for examination and the tumor removed immediately if malignant. It is important prophylactically that cases of chronic uterine infection be adequately treated as well as any infection or strictures preventing free uterine drainage. Curative

treatment consists of surgical removal, radiotherapy or a combination of these. Total abdominal hysterectomy with removal of the tubes and ovaries is usually sufficient for cancer only involving the body of the uterus but a more radical operation followed by roentgen therapy is necessary when there is regional lymph node enlargement or other organs have become involved. The operative risk should not be more than 1 per cent at most for good surgical risks with a probable five year survival rate of 68.7 per cent. Intrauterine radium followed by three full courses of roentgen therapy is used for bad surgical risks with extensive involvement. Cervical cancer is much more difficult to treat than carcinoma of the uterine body. About 75 per cent of these lesions are grade 3 or 4 malignancies. Only about 25 per cent of these patients treated by radiotherapy survived more than five years though the local growth was apparently eradicated. Many survivors had urinary and fecal fistulas, roentgen ray skin burns, strictures, etc.

The Wertheim hysterectomy has been increasingly used in recent years for good surgical risks having early uterine carcinoma, the operation being either preceded or followed by roentgen therapy. Taussig's procedure of removing the lymph nodes as in the Wertheim operation without removing the uterus and following this by full doses of radium to both cervix and interior of the uterus with full courses of roentgen therapy to the pelvis deserves a thorough trial though cure by radiotherapy alone is hopeless once the regional lymph nodes are involved. The Wertheim operation is described. Preliminary local treatment of the vagina and cervix is important. The vagina is well cleaned and sterilized after the patient is anesthetized. Application of a saturated solution of zinc chloride to the local growth is preferred to cauterization or partial removal. This coagulates the tissue instead of leaving a friable and bleeding surface. Care must be taken to avoid spilling any of the zinc solution in the vagina as it kills tissue. A strip of wrung out zinc chloride gauze is inserted well up in the uterine cavity and the cervix closed over the growth by turning in some vaginal mucosa. If this is impracticable because of the type of lesion, nothing should be done in order not to break into malignant tissue. The uterus is filled with zinc chloride gauze in such cases and a free end left to more or less cover the local growth. Dry gauze is then packed in the vagina. The vaginal opening is promptly closed after removal of the uterus and adnexa. Removal of the lymph nodes along both external and internal iliac vessels and in the obturator space is important but considered unnecessary higher up. The operation should not take over an hour and a half. Postoperative care is routine except that a single course of roentgen therapy is usually given seventeen to eighteen days after operation and two additional courses about a month apart. 4 references. 4 tables. 3 figures.

VAGINAL SMEARS AS AN AID IN THE DIAGNOSIS OF EARLY CARCINOMA OF THE CERVIX.

Maurice Fremont-Smith, Ruth M. Graham and Joe V. Meigs, Massachusetts General Hospital and Harvard Medical School, Boston, Mass. New England J. Med. 237:302-304, Aug. 28, 1947.

The great majority of deaths from cancer of the uterus follow cervical carcinoma yet about 60 per cent of cases are inoperable when first seen by a surgeon. The interval between the beginning symptoms and commencement of treatment still averages about seven months. Even clinically early cases recur after radiation or operation so that the supposedly early case may actually be more or less advanced. This is substantiated by the fact that pre-invasive cancer was found in 3.9 per cent of 1,200 cases in which the cervix was removed for other reasons. These women averaged 36 ½ years old as contrasted with an average age of 48 ½ years for 50 cases shown by biopsy to have cervical cancer. Only 1 in 4 of these pre-invasive cases had had any abnormal bleeding. A case is described of a woman who was examined every six months for seven years without evidence of cancer being found. Biopsy then showed early squamous-cell carcinoma of the cervix. Examination of additional sections from specimens taken in previous years were then found to show cancer in certain areas. The patient had had cancer of the cervix for seven years before early carcinoma was diagnosed.

A method of making vaginal smears and examining them for cancer cells was described in 1941. In this, a dry capillary pipet with rubber suction bulb is inserted into the posterior vaginal fornix, vaginal secretion being taken up by the pipet when the bulb is released. This fluid is blown on a slide, fixed in equal parts of 95 per cent alcohol and ether while still wet, stained and examined for cancer cells. A series of 12 cases of early cancer of the cervix is reported in which vaginal smears made by this method were positive in 10 cases. An early diagnosis is absolutely necessary if carcinoma of the cervix is to be cured. It has been shown that preinvasive cancer exists for several years before being clinically evident. A cancer has frequently passed beyond the early stage when it manifests itself symptomatically. Preinvasion cancer of the cervix may be diagnosed also by the study of vaginal smears. 14 references. 1 table.

References to Current Articles

Analysis of Pelvic Operations Preceding Hysterectomy. Curtis Tyrone, Tulane University School of Medicine and Ochsner Clinic, New Orleans, La. Ann. Surg. 125:669-72, May 1947.

Gynecology. The Vaginal Smear. Howard Ulfelder and Joe V. Meigs, Massachusetts General Hospital, Boston, Mass. New England J. Med. 237: 54-56, July 10, 1947.

Radium Therapy of Cancer of the Uterine Cervix. Robert E. Fricke, Mayo Clinic, Rochester, Minn. S. Clin. North America 27:775-89, August 1947.

Panhysterectomy and Subtotal Hysterectomy. Indications and Technic. Virgil S. Counseller, Mayo Foundation, Rochester, Minn. S. Clin. North America 27:790-95, August 1947.

The Selection of Patients and a Technic for Vaginal Hysterectomy. John M. Waugh, Mayo Clinic, Rochester, Minn. S. Clin. North America 27: 796-806, August 1947.

Surgical Treatment of Acute Gynecologic Conditions. Joseph Hyde Pratt, Mayo Clinic, Rochester, Minn. S. Clin. North America 27:807-19, August 1947.

Functioning Ovarian Tumors. Malcolm B. Dockerty, Mayo Clinic, Rochester, Minn. S. Clin. North America 27:837-47, August 1947.

Cancer of the Uterus. Emil Novak, Baltimore, Md. J. A. M. A. 135:199-206, Sept. 27, 1947.

Improvement in Abdominal Hysterectomy Mortality. Roger S. Siddall and Harold C. Mack, Harper Hospital and Wayne University College of Medicine, Detroit, Mich. Surg., Gynec. & Obst. 85:176-84, August 1947.

Management of Urinary Incontinence in Women. Deward O. Ferris, Mayo Clinic, Rochester, Minn. S. Clin. North America 27:857-65, August 1947.

Medical Versus Surgical Treatment of Pelvic Inflammatory Disease. Robert W. Wilson, Mayo Foundation, Rochester, Minn. S. Clin. North America 27:866-74, August 1947.

Treatment of Chronic Salpingitis With Benzyl Cinnamate Ester (Jacobson's Solution). Morris I. Eisenstein and George J. Bendo, New York, N. Y. Am. J. Surg. 74:200-204, August 1947.

Cancer of the Ovary. Neil W. Swinton and Charles R. Yancey, Lahey Clinic, Boston, Mass. S. Clin. North America 27:681-90, June 1947.

Sarcoma of the Uterus. Neil W. Swinton and George O. Miles, Lahey Clinic, Boston, Mass. S. Clin. North America 27:691-95, June 1947.

Carcinoma of the Corpus Uteri. Kenneth W. Warren, Lahey Clinic, Boston, Mass. S. Clin. North America 27:696-99, June 1947.

Uterus Didelphys with Ectopic Tubal Gestation. Miles T. Hoerner (Col., M. C., A.U.S.), Lawrence H. Wilkinson (Capt., M.C., A.U.S.) and Irwin H. Kaiser (Capt., M.C., A.U.S.). Am. J. Surg. 74:100-102, July 1947.

40. Vascular Surgery

THE REPAIR OF ARTERIOVENOUS FISTULAS. EVALUATION OF OPERATIVE PROCEDURES AND ANALYSIS OF FIFTY-THREE CASES.

E. Craig Heringman, James D. Rives and Harry A. Davis, New Orleans, La. J. A. M. A. 133:663-68, Mar. 8, 1947.

In 53 cases of arteriovenous fistula three main types of surgical intervention were used: (1) ligation operations; these included quadruple

ligation with excision and sextuple ligation procedures; (2) restorative procedures; these included transverse arteriorrhaphy and the vitallium tube-venous graft method; (3) intrasaccular obliterative procedures which preserve the collateral channels.

Comparison of these three types of surgical operation on the basis of postoperative vascular competency and analysis of the data indicate that transverse restorative procedures are followed by significantly fewer cases of vascular insufficiency than are any of the procedures which involve ligation or obliteration of the main artery.

The procedure of choice can be determined at the operating table when the local factors become apparent; the principal objective of the surgeon is to restore the original arterial pathway if possible.

There was 1 death in 53 cases, with a mortality rate of 1.9 per cent. 9 references. 3 tables. 8 figures.

(*Although an arteriovenous fistula which has been present for any length of time usually has sufficient collaterals that even extirpation of the fistula can be done with the maintenance of viability of the extremity distal to the fistula, in those cases in which it is necessary to operate before sufficient collaterals have developed, ablation of the regional sympathetic ganglia, either surgically or by chemical means, is desirable in order to maintain viability. The experiences during the war have shown that reconstructive procedures such as advocated by the authors are certainly to be preferred to the destructive ones, especially as regards the return of perfectly normal function in the extremity.*—ED.)

THE CHOICE OF OPERATION FOR THE TREATMENT OF ARTERIOVENOUS FISTULAS.

E. Craig Heringman, Louisiana State University School of Medicine, New Orleans, La. Surg., Gynec. & Obst. 84:903-12, May 1947.

There are three main types of operation used in the treatment of arteriovenous fistulas. The first type, which is most frequently used, is quadruple (or sextuple) ligation with excision, the second type is a restorative procedure using arteriorrhaphy or a vitallium tube-venous graft method. The third type is obliterative, intrasaccular endoaneurysmorrhaphy (Matas).

Quadruple ligation with excision eliminates the arteriovenous fistula without causing gangrene. Sextuple ligation is done if the fistula occurs between an artery and its two venae comitantes. These ligation methods must often be employed, especially the sextuple technic in dual fistulas, when a restorative procedure cannot be used. They have certain disadvantages, however, especially the fact that the main arterial pathway must be ligated; dissection around the sac also necessitates the ligation of some collateral vessels necessary for the maintenance of blood flow to distal parts. The operation is not physiologic and may be followed by evidence of vascular insufficiency.

Transvenous arteriorrhaphy can be done without difficulty if the fistula

is in a region where the blood supply can be controlled by a proximal constrictor or temporary ligations. The advantages of this operation are that it preserves the main arterial pathway and provides a rapid approach to the fistula with little interference with the collateral circulation. But certain local conditions that are discovered only at the time of operation are contraindications to this procedure. Advanced pathologic changes in the arterial wall render closure of the fistula impossible without too great a reduction in the lumen of the artery; local conditions may make the necessary control of the circulation difficult or impossible. Unless the artery is completely exposed and carefully inspected, a weak point in the arterial wall may not be found and this may result in the formation of an aneurysm. Thrombosis may occur at the site of the suture.

Another reparative procedure recently described by Freeman is transverse suture, for which both the artery and vein must be completely exposed, thus obviating one of the difficulties of transvenous arteriorrhaphy; another advantage is that this method can be used when there is a wide defect in the arterial wall; it cannot be used, however, when there is a long slit-like opening between artery and vein. Otherwise the disadvantages of this operation are the same as those of transvenous arteriorrhaphy.

The development of the technic of vitallium tube-venous graft by Blakemore and Lord introduces a new reparative procedure for the treatment of arteriovenous fistula. This method provides for complete excision of the fistula, the sac and the portion of the artery showing pathologic changes, while the function of the main artery is maintained by the venous graft; it does not require suturing of blood vessels. The chief disadvantage of this operation is that dissection of the sac and fistula may interfere with the collateral circulation, with resulting vascular insufficiency if early thrombosis occurs in the venous graft.

The obliterative procedure, intravascular obliterative endoaneurysmorrhaphy, was originally designed for the treatment of true or false aneurysms, but may also be used in the treatment of arteriovenous fistulas. This operation cures the fistula and preserves the collateral circulation; it is of special value in the treatment of cases with a large sac and numerous communications. It obliterates the main arterial pathway, however, and can be done only when proximal control of the circulation by a constrictor is possible. There may be a high incidence of vascular insufficiency after this operation.

The choice of operation in any given case of arteriovenous fistula is difficult; in some cases none of the standard operations can be done without variations in the technic, and the surgeon may have to "improvise" his own technic in certain cases.

The local factors that may render operation difficult and necessitate changes in technic are: scarring around the blood vessels secondary to the original trauma; local pathologic changes in the wall of the blood vessels involved; the anatomic location of the fistula especially the involvement of the common or the internal carotid artery and other large arteries; factors relating to the aneurysmal sac; the adequacy of the collateral circulation.

The factors relating to the aneurysmal sac are the location and size of the sac, and the condition of the sac wall. Ten illustrative cases are reported indicating the various methods employed in dealing with these local conditions.

The general factors that may influence the choice of operation in any given case include the cardiac status of the patient, the presence of generalized arteriosclerosis and the occupation of the patient. In most cases of arteriovenous fistula, the cardiac changes are moderate and reversible and any one of the surgical procedures described can be used after careful preoperative preparation. If there is severe myocardial damage, a ligation of the proximal artery and vein or the proximal vein alone may be done for temporary relief; the patient may subsequently be fit for an operation for repair of the fistula. In cases of generalized arteriosclerosis a reparative operation is contraindicated; quadruple ligation is the method of choice in such cases. Patients with sedentary occupations often do well following quadruple ligation; but those whose occupation involves strenous exercise require a reparative operation that preserves the main arterial pathway. 17 references. 1 table. 9 figures.

ARTERIOVENOUS FISTULAS.

Daniel C. Elkin and James V. Warren, Ashland General Hospital, White Sulphur Springs, W. Va. and Emory University School of Medicine, Atlanta, Ga. J. A. M. A. 134:1524-28, Aug. 30, 1947.

Observations of the effect of arteriovenous fistulas upon the circulation of 375 patients are summarized and symptoms reviewed. This condition is characterized by a continuous murmur during both systole and diastole instead of the systolic murmur of an arterial aneurysm.

Cardiac abnormalities were not usually found on physical examination but teleoroentgenogram measurements after surgical removal of the fistula often showed a decreased transverse diameter of the heart. An occasional considerable cardiac enlargement was found, however, which seemed to be a dilatation rather than a hypertrophy. Measurements of cardiac output in 47 patients showed it to be elevated in about half the cases to above the level in the same patients after the fistula was removed, sometimes to twice normal. These measurements are the best indication of functional size of the fistula. Proximity of the fistula to the heart may cause a large or small increase of cardiac output but size of the fistula and the vessels concerned are the important factors in determining the blood flow through it. Observations on the blood volume showed no difference before and after the operation in a little more than half the patients but it was diminished as much as 1,000 cc. per square meter of body surface in the remainder. These postoperative values were within the normal range, indicating that the blood volume was materially elevated while the fistula was intact. Circulatory changes following temporary closing of the fistula are discussed. The most common is a slowing of the pulse rate. This is considered

an important diagnostic difference between this condition and true aneurysm. The basic change in arteriovenous fistula is the direct communication between artery and vein with resulting flow of blood from artery to vein, the amount depending upon size of the fistula, difference in pressures and amount of blood flowing to the part. Because of the elasticity and capacity of the veins, their valves and the size of the venous bed, the increased venous pressure caused by the flow of blood through the fistula is usually localized. The changes in cardiac output are the result of changes in the arterial circulation caused by blood flowing away from it through the fistula. Increased cardiac size is probably a result of the increased blood volume which is briefly discussed. 13 references. 10 figures.

References to Current Articles

The State of Peripheral Circulation in Indolent Wounds of the Extremities (*Sostoyanie perifericheskogo krovoobrashcheniya pri dliteľno nezazhivayushchikh ranakh konechnosteĭ*). E. A. Zakharova, The State Research Institute of Physiotherapy, U. S. S. R. Khirurgiya No. 3, 47-50, 1947.

Congenital Arteriovenous Fistula Between the Internal Maxillary Artery and Pterygoid Plexus. Frank Gerbode and Emile Holman, San Francisco, Calif. Surgery 22:209-22, August 1947.

The Effect of Rotation on the Circulation of the Lower Extremities. Herman E. Pearse, and Paul R. Schloerb, University of Rochester School of Medicine and Dentistry, Rochester, N. Y. Ann. Surg. 126:243-45, August 1947.

Recent Advances in Vascular Surgery. A Review of the Literature. Ralph A. Deterling, Jr., Mayo Foundation, Rochester, Minn. Arch. Surg. 55:31-50, July 1947.

Pathological and Physiological Considerations in Arteriovenous Fistulas. Joseph C. Doane and Charles H. Kravitz, Jewish Hospital, Philadelphia, Pa. Am. J. Surg. 73:713-16, June 1947.

Functional Survival of Autogenous and Homogenous Transplants of Blood Vessels. An Experimental Study. Carl S. Williamson and Frank C. Mann, Mayo Foundation, Rochester, Minn. Arch. Surg. 54:529-40, May 1947.

Lesions of the Blood Vessels Following Acute Injury. Robert A. Wise, 203rd General Hospital and Veterans Hospital, Portland, Ore. Northwest Med. 46:600-605, August 1947.

41. Arteries

SUCCESSFUL SUTURE OF THE ABDOMINAL AORTA FOR ARTERIOVENOUS FISTULA.

Norman E. Freeman (Lt. Col., M.C., A.U.S.) and Ambrose H. Storck (Lt. Col., M.C., A.U.S.), De Witt General Hospital, Auburn, Calif. Surgery 21:623-29, May 1947.

In most cases in which an arteriovenous fistula involves the abdominal aorta and vena cava, the patient usually dies from massive hemorrhage following the injury; or from early cardiac failure resulting from the short-circuiting of the circulation.

One case of successful repair of the abdominal aorta for an arteriovenous fistula was recently reported by Pemberton, Seefeld and Barker; in a review of the literature the authors were unable to find any previously reported case in which the patient had survived for a sufficient length of time to prove the operation successful. The case reported in this article is apparently the second case in which a successful repair of the aorta has been done.

The patient was a soldier who had been shot in the abdomen, the bullet passing out through the back and injuring the spine and spinal cord with resulting paralysis of the lower extremities; laminectomy resulted in a considerable return of function. Six weeks after injury, the patient was examined because of epigastric pain, and a pulsating mass with thrill was found in the upper abdomen; a diagnosis of aneurysm of the abdominal aorta was made. The operation for repair of the abdominal aorta was done four months after the original injury when the patient had been returned to the United States. Intratracheal ether-oxygen anesthesia was used and a continuous transfusion of whole blood (3,000 cc.) and 500 cc. normal saline was given during the operation. Since the aneurysmal sac lay between the aorta and the vena cava, the abdominal aorta was exposed by retroperitoneal exposure of the anterior surface of the psoas muscle and the lumbar vertebrae, displacing the abdominal contents from the left lumbar gutter. A segment of rubber tubing was placed around the aorta just proximal to the origin of the inferior mesenteric artery; another section of tubing was placed around the aorta just above the origin of the left renal artery; and a third section around the left renal artery. The tissues surrounding the fistula were incised and the aorta was cut away from the aneurysm; the opening in the aorta was closed by a transverse running stitch, with No. 000 Deknatel, previously passed through sterile mineral oil. Bleeding from the sac was easily controlled by digital pressure, and the opening in the sac closed by a running stitch of No. 000 silk.

Following operation, an increase in the paralysis of the pelvic structures and lower extremities occurred, which is explained by the fact that the abdominal aorta was completely occluded for one hundred and five minutes during the operation, with resulting impairment of the circulation to the spinal cord and cauda equina. There was also a temporary suppres-

sion of renal function with associated hypertension; this was probably due to renal ischemia caused by the occlusion of the abdominal aorta above the renal arteries at operation. Renal function improved at the end of two weeks and the hypertension subsided; there was no evidence of permanent renal damage. There was also definite improvement in the paralysis within two months, and at the last report eight months after operation the patient was able to walk with only one cane; there were no signs of recurrence of the fistula. 7 references. 1 table. 3 figures.

(*The successful outcome in this remarkable case proved the wisdom of segregating certain types of war injuries in specialized hospitals where the operations were performed by skilled specialists and where all the facilities for the proper performance of the operations were available.*—D. C. E.)

TETRA-ETHYL-AMMONIUM AS AN ADJUNCT IN THE TREATMENT OF PERIPHERAL VASCULAR DISEASE AND OTHER PAINFUL STATES.

Frederick A. Coller, Kenneth M. Campbell, Robert E. L. Berry, Martin R. Sutter, Richard H. Lyons and George K. Moe, University of Michigan Medical School, Ann Arbor, Mich. Ann. Surg. 125:729-55, June 1947.

Clinical observations made on a large series of patients with peripheral vascular disease and associated ailments who were given injections of tetra-ethyl-ammonium to cause an autonomic blockade are reported. The part played by the autonomic nervous system in these conditions and benefits obtained from one or more autonomic blockades are discussed. The pharmacology of tetra-ethyl-ammonium is reviewed.

The diagnosis of causalgia and related states is discussed and illustrative case reports with results obtained with treatment by autonomic blockade presented. Injection of tetra-ethyl-ammonium gave relief in 10 of 20 cases and enabled physiotherapy to be carried out regularly. A series of 9 cases of herpes zoster and postherpetic neuralgia were treated with an average of eight autonomic blocks in eight days. Pain was relieved for short periods to six hours per block. The exact part played by vasospasm in herpes zoster is not well understood. Tetra-ethyl-ammonium was used in 35 cases of Buerger's disease, 40 per cent also having thrombophlebitis. Diagnostic autonomic blockade was done in 16 of these patients to determine the existence of any functional component. It was used both diagnostically and therapeutically in the remainder. Repeated autonomic blockades changed 1 case of terminal Buerger's disease into an ambulatory patient who did not need analgesics. The diagnostic use was to better determine the benefits to be expected from sympathectomy. Lumbar sympathectomy was done on 9 patients as a result of their response to tetra-ethyl-ammonium with universally good to excellent results.

This drug was especially valuable clinically in determining the benefits to be expected from autonomic ganglion blockade in thrombophlebitis. It was used on 21 patients with thrombophlebitis which had existed from

six weeks to a maximum of twenty-six years with good to excellent results in practically all cases. About 125 cases of peripheral arteriosclerosis obliterans were given autonomic blockade. Existing gangrene was naturally not changed but an occasional case showed surprising functional improvement. Other patients were tested to determine probable results from lumbar sympathectomy. Because of the time factor, lack of response to the drug does not contraindicate sympathectomy, many cases improving after the operation if given sufficient time.

Doses of 500 mg. or less caused no serious toxic effects in over 1,500 injections, 1 patient receiving 42,000 mg. in six weeks without ill effect. The drug should be cautiously administered to hypertensive patients, however, especially those with a neurogenic element, because precipitous drops to as low as 50 mm. of mercury systolic pressure occasionally occur. Elderly patients or those with a too labile sympathetic nervous system should be started on small doses and worked up over several days to 500 mg. Best results were chiefly obtained with a total dosage of 5,500 to 8,500 mg. over one to three weeks for 11 to 17 blocks.

This study showed that autonomic blockade will relieve the clinical symptoms and pains in vascular and related diseases by relief of vasospasm and in other ways not understood. 20 references. 8 tables. 4 figures.

(*The use of drugs to produce autonomic blockade offers great possibilities. In some instances, as in this report, the results have been encouraging, but a larger number of observations from various clinics on this and other drugs will be necessary before proper evaluation can be made.*—D. C. E.)

TRAUMATIC ARTERIAL VASOSPASM.

Philip S. Foisie, Tufts College Medical School, Boston, Mass. New England J. Med. 237:295-302, Aug. 28, 1947.

Vasospasm of varying intensity and obstinacy frequently complicates traumatic injuries of the extremities. The more moderate types of this condition in which a persistent but comparatively low grade arterial spasm may cause nutritional changes in the tissues are discussed. An injury to a large artery or a major arterial spasm which threatens the life of a limb are actively treated but only slight attention is paid to a mild or subacute arterial spasm though it threatens the ultimate function of the extremity. The incidence of arterial spasm is not affected by the character of the original wound. Extensively damaged soft tissues of an extremity may have adequate circulation while minor injuries can result in loss of a limb.

The occurrence of the simplest form of vasospasm that might escape observation is described. The characteristic symptoms are change in color to a blotchy cyanosis, decreased surface temperature, swelling and numbness rather than pain. The patient is comfortable while the extremity is supported and at rest. A diminished or absent peripheral pulse in the affected limb with an adequate pulse on the alternate side and variably res-

ponsive to vasodilatation is practically pathognomonic. Continued mild vasospasm causes circulatory malnutrition of the part with resulting osteoporosis, muscle atrophy, limited and painful motion with deformities and joint stiffness.

Treatment is basically adequate diet, vitamins and rest to correct the blood loss and dehydration. Extremities are kept warm but not overheated and exposure to inclement weather avoided. Paravertebral novocaine blocks caused temporary improvement from a couple of hours to two or three days. The objections to sympathetic paralysis are discussed. Circulation of the deep tissues is regulated differently than the surface. The blanched, cool surface of an extremity in vasospasm is actually a protective mechanism because the surface blood has been shifted to the deep structures where it is more urgently needed. Diversion of the blood from the deep to the surface circulation by sympathetic paralysis actually makes the patient worse. Clinical improvement after sympathetic block is considered to indicate vasospasm. 8 references. 9 figures.

References to Current Articles

The Emergency Treatment of Vascular Occlusions. Edgar V. Allen, Mayo Clinic, Rochester, Minn. J. A. M. A. 135:15-17, Sept. 6, 1947.

The Effect of Stimulation of the Carotid Sinus Region on Absorption of Chloride from the Small Intestine. Edward J. Van Liere, J. Clifford Stickney and David W. Northup, School of Medicine, West Virginia University, Morgantown, W. Va. Am. J. Physiol. 150:149-52, July 1947.

Primary Arterial Injury Complicating Extremity Fractures. Donald W. Hedrick, F. B. Hawkins and C. O. Townley, Henry Ford Hospital, Detroit, Mich. J. Bone & Joint Surg. 29:738-44, July 1947.

Intra-Arterial Fluorescein for Evaluation of Peripheral Vascular Diseases. George E. Moore and Gilbert S. Campbell, University of Minnesota, Minneapolis, Minn. Proc. Soc. Exper. Biol. & Med. 65:297, June 1947.

Traumatic Thrombosis of the Arteries (*Travmaticheskiĭ tromboz arteriĭ*). S. M. Kalmanovskiĭ, The Chelyabinsk Medical Institute, U. S. S. R. Khirurgiya No. 3, 51-52, 1947.

Circulatory Changes Produced by Clamping of the Thoracic Aorta. Elton Watkins, Jr. University of Oregon Medical School, Portland, Ore. Surgery 22:530-39, September 1947.

Subcutaneous Heparin in the Treatment of Arterial Thrombotic Disease. Preliminary Report. I. H. Richter, H. B. Eiber and Leo Loewe, Thromboembolic Disease Unit, Jewish Hospital of Brooklyn, Brooklyn, N. Y. Surgery 22:489-95, September 1947.

Carotid Body Tumor in Association with Carotid Sinus Syndrome. Report of Two Cases. Barton McSwain, Nashville, Tenn. and Frank C. Spencer, Baltimore, Md. Surgery 22:222-30, August 1947.

Acute Traumatic Aneurysm of the Palm. John J. Cawley, Mercy and Ba-

kersfield Hospitals, Bakersfield, Calif. Am. J. Surg. 74:98-99, July 1947.

The Clinical Behavior of Arteriosclerotic Aneurysm of the Abdominal Aorta. A Rational Surgical Therapy. Arthur H. Blakemore, Columbia-Presbyterian Medical Center, New York, N. Y. Ann. Surg. 126:195-207, August 1947.

Acute Injuries Involving the Large Vessels in the Neck. Manuel E. Lichtenstein, Michael Reese Unit (16th Evacuation Hospital—A. U. S.), Northwestern University Medical School, Chicago, Ill. Surg., Gynec. & Obst. 85:165-75, August 1947.

Gangrene in Diabetes Mellitus. Joseph H. Crampton, James W. Miller and Louis D. Fey, Mason Clinic, Seattle, Wash. 46:531-35, July 1947.

Clinical Evaluation of Vascular Damage in Diabetes Mellitus. Henry Dolger, Mount Sinai Hospital, New York, N. Y. J. A. M. A. 134:1289-91, Aug. 16, 1947.

A Case of Thrombosis of the Abdominal Aorta. Robert Paul, Falkirk and District Royal Infirmary, Brit. M. J. 4502:531, Apr. 19, 1947.

Experiences with Pulsating Hematoma. William C. Beck (Col., M. C., A. U. S.), Sayre, Pa. Am. J. Surg. 73:580-87, May 1947.

Autohaemagglutination and Raynaud's Phenomenon. G. B. Forbes (Major, R. A. M. C.) Brit. M. J. 4504:598-600, May 3, 1947.

Symmetrical Gangrene in the African. Michael Gelfand, Salisbury Native Hospital, Southern Rhodesia. Brit. M. J. 4510:847-49, June 14, 1947.

42. Veins

References to Current Articles

A Technique for Portacaval Anastomosis (Eck Fistula). G. Stewart Welch, Tufts College Medical School, Boston, Mass. Surg., Gynec. & Obst. 85:492-94, October 1947. Describes a technic for end to side anastomosis of the portal vein to the inferior vena cava, and reports a case in which this operation was done with good results. 7 references. 2 figures.

Ligation of the Inferior Vena Cava. B. G. Shafiroff, Brooklyn, N. Y. Am. J. Surg. 73:621-23, May 1947.

New Ligation Knife Facilitating Subcutaneous Ligation of Varicose Veins. Egmont J. Orbach, New Britain, Conn. Am. J. Surg. 73:631-33, May 1947.

Ligation of Inferior Vena Cava for Septic Thrombophlebitis, Gilman D. Kirk, Columbus, Ohio. Am. J. Surg. 73:606-12, May 1947.

A Study of the Results of the Surgical Treatment of Varicose Veins. Ross S. McElwee, Jr. and Bernard Maisel, New York Hospital and Cornell University Medical College, New York, N. Y. Ann. Surg. 126:350-57, Sept. 1947.

The Effects on Venous Endothelium of Alterations in Blood Flow Through The Vessels In Vein Walls and the Possible Relation to Thrombosis. James F. O'Neill, Boston, Mass. Ann. Surg. 126:270-88, September 1947.

An Evaluation of Pulmonary Embolism Following Intravascular Venous Thrombosis. John J. Morton, E. B. Mahoney and G. B. Mider, University of Rochester School of Medicine and Dentistry, Rochester, N. Y. Ann. Surg. 125:590-603, May 1947.

Thrombophlebitis. The Problem of Treatment. Hollis L. Albright, Boston University School of Medicine, Boston, Mass. New England J. Med. 236:928-33, June 19, 1947.

Allergic Manifestations After the Injection Treatment of Varicose Veins. Eliza A. Melkon and Dorothy K. Scheidell, New England Hospital for Women and Children, Boston, Mass. New England J. Med. 236:940-42, June 19, 1947.

Changes in the Peripheral Nervous System in Impaired Venous Vascularization (*Izmenenie perifericheskoĭ nervnoĭ sistemy pri narushenii venoznoĭ vaskulyarizatsii*). A. A. Begel'man, The First Lenin Medical Institute of Moscow, U. S. S. R. Khirurgiya 47-55, No. 5, 1947.

43. Orthopedic Surgery

THE PRESENT STATUS OF THE LEG LENGTH DISCREPANCY PROBLEM.

J. Warren White, Greenville, S. C. Ann. Surg. 125:662-68, May 1947.

Greater appreciation of the adjustments that can be made by the spine, pelvis and lower extremity when one leg is shorter than the other have materially decreased the necessity for surgery in that condition. If the child is seen sufficiently early and there is not too much deformity, the present growth arrest technic enables approximate leg equalization at growth maturity with a comparatively minor operation. It is felt that a difference in length of the legs is frequently over-emphasized, especially with back pain and sclerosis, leg shortness being blamed for a limp which is actually caused by a deformity of the hip or an impaired muscle function.

An accurate technic for measuring discrepancies in leg lengths is important. Roentgenograms of the pelvis taken with both feet firmly pressed down on a supporting shelf have given excellent results, making a permanent and adequate record.

The modified Phemister growth arrest operation on the distal femur done in children at an age permitting adequate correction at maturity has been found decidedly the best of all procedures suggested for the correction of leg length deformity. This stops growth at the metaphyseal plate of the femur or the proximal metaphyseal plate of the tibia and fibula, or both, as required. A 3/8 inch correction per year is figured on the distal femur and 1/4 inch on the tibia and fibula. The growth of bone usually stops at 15 years of age in girls and 16 to 17 in boys. Very accurate records and the performance of an exact operation at the proper time are essential for a good result. Multiple operations arresting both femoral and

tibial epiphyses simultaneously are occasionally justified where the age is such that the growth retardation rate will not be effective in time. 14 references.

(*Using a gage of three-eighths inch correction per year for the lower femur and one-quarter inch for the tibia and fibula with epiphyseal arrest, has the advantage of simplicity only. It falls short of its goal in that it fails to take into consideration familial and individual growth variations and characteristics.*—H. R. M.)

MALIGNANT NEOPLASM ORIGINATING IN SYNOVIAL TISSUES (SYNOVIOMATA).

Granville A. Bennett, Army Institute of Pathology, Washington, D. C. J. Bone & Joint Surg. 29:259-91, April 1947.

Results of a study of 32 specimens of malignant neoplasms removed from synovial lined structures are presented. These are commonly called synovioma and are distinguished from other malignant growths by certain cytologic and structural features which are described. The patients from whom these tumors were removed varied in age from 2 months to 56 years and the tumors were known to have existed for one month to six years. Most of the growths themselves or an increase in previous swellings had only been noted for a few months however. There was a definite history of trauma in only 5 cases. Most of these tumors developed in the popliteal space or Hunter's canal. Their occurrence away from joints is explained by the wide distribution of synovial tissues in the body and their possible development from other mesenchymal tissues.

It is difficult but important to distinguish these neoplasms from benign growths. They are commonly located near tendons, tendon sheaths and the external walls of bursal pouches or joint capsules but the microscopic appearance of sections vary. Synovioma may develop in or near a joint which has been abnormal for months or years. The usual treatment is local excision which is often followed later by a more extensive excision or amputation. It is therefore essential that all patients from whom such tumors, benign or otherwise, have been removed be followed for some years.

These tumors have a high mortality rate, 11 patients in this series having died with extensive metastases and recurrences having been reported or occurred in 5 others. This indicates the need for close cooperation between the surgeon and the pathologist because these tumors usually develop in an extremity and remain localized for long periods, affording ample opportunity for early radical removal without preliminary conservative treatment. 12 references. 1 table. 53 figures.

(*This study is based on a series of collected cases and describes in detail a lesion which will not often be encountered.*—H. R. M).

FIXATION OF BONES BY PLATES AND SCREWS.

Leonard T. Peterson, Washington, D. C. J. Bone & Joint Surg. 29:335-47, April 1947.

The necessity for plates and screws to have a certain chemical composition to make the metal inert in the body resulted in certain deficiencies which caused them to bend, break or corrode. These deficiencies have now been corrected. Standard plates of six sizes, uniform thickness and maximum width throughout and having constant physical properties have been adopted. These are rigid and strong but can be bent as necessary. Exact dimensions and tolerances of screws have been established, the maximum amount of thread being available for fixation. A pilot screw point is a new device which enables the screw being placed in the bone without a holding device, starts it in the proper direction so that it will follow the center of the proximal hole and hit the center of the distal hole.

Certain technical points in the use of bone plates and screws are stressed. Any inequality between the plate and the bone should be adjusted before it is fixed, by shaping the plate, not by bending it. The screw should be centered in the hole in the plate so that there will be uniform contact and pressure by the screw on the plate. A drill guide or centering device is not generally used but is a valuable aid in drilling vertically to the plate and in the center of the hole. A simple form is illustrated. The drill point should be turned without describing an arc because that enlarges the hole. The rate of drilling with electric drills is important. High speed, especially a drill, burns the bone and produces necrosis. The drill point must be sharp and absolutely straight. A standard tapered head screw does as well as the flat headed screw if the hole is reamed with a countersink of the exact shape and size of the head. The countersink is especially useful when bone fragments are fixed by screws as it is often necessary to place these screws at an angle and the countersink enables the head to be recessed and still fit the hole uniformly. 2 references. 3 tables. 15 figures.

THE EVALUATING OF CORTICAL AND CANCELLOUS BONE AS GRAFTING MATERIAL.

Leroy C. Abbott, Edwin R. Schottstaedt, John B. De C. Saunders and Frederic C. Bost, University of California Medical School, San Francisco, Calif. J. Bone & Joint Surg. 29:381-414, April 1947.

The results of animal experiments and clinical studies to determine the relative values of cortical and cancellous bone as bone grafts and the joint use of either type are presented. Animal experiments showed that cortical bone grafts died after ten days with absorption and eventual new bone formation. Most cancellous grafts lived to produce new bone. Revascularization occurred promptly with rapid union. Reasons for these differences are explained. The mature bony elements do not survive in either type of graft, new bone being produced by the cells of the endostal and periosteal

layers. Cortical bone is a solid mass of mature elements covered with endosteum and periosteum. It therefore is strong but has little osteogenetic power. Cancellous bone is loose with many interlacing trabeculae all of which are covered by endosteal cells so that it has a high osteogenetic power. Its loose structure also permits rapid revascularization.

Clinically then, cortical bone is most valuable where strength is required as in ununited fractures of shafts of long bones. Cancellous bone is best used in ununited fractures of the ends of long bones, in fusion of joints of the spine, in bony defects caused by tumors or infection or in open-wedge osteotomy. Both types of bone may be used jointly.

Removal of sequestra, plastic procedures and use of the sulfonamides and penicillin are all important in the treatment of infected compound fractures. Dual or triple grafts with cortical bone, cancellous bone or both have been successfully used when there was moderate bone loss. In cases with extensive bone defect, the gap is first filled with cancellous bone to obtain early union and provide a vascular bed for a cortical graft which is inserted at a later operation. Cancellous bone is very viable in the presence of infection whereas cortical bone rarely survives and is usually discharged as a sequestrum. Use of cancellous bone will therefore often cause healing in cases of nonunion or cavity formation with infection, especially in the ends of long bones or bones of the carpus and tarsus. 35 references. 25 figures.

(*The increased stimulation of osteogenesis which follows the use of cancellous bone now seems well established both clinically and experimentally. The excellent work of this group has done much to popularize the use of cancellous bone and at the same time furnish a sound scientific explanation for the advantages which its use affords.*—H. R. M.)

EXPERIENCES WITH EPIPHYSEAL ARREST IN CORRECTING DISCREPANCIES IN LENGTH OF THE LOWER EXTREMITIES IN INFANTILE PARALYSES.

William T. Green and Margaret Anderson, Children's Hospital, Harvard Medical School and Harvard School of Public Health, Boston, Mass.
J. Bone & Joint Surg. 29:659-78, July 1947.

Bony growth in the extremities may be modified in a child by inhibiting growth of the longer limb. Epiphyseodesis or surgical epiphyseal arrest has been shown to be a practicable method. In order to obtain satisfactory results however, the growth which will occur in the extremity from any given age to maturity must be predicted with reasonable accuracy so that the operation may be properly located at the age in question to permit the length to be equalized. Efficacy of result depends upon the growth of the shorter extremity.

Various methods of predicting growth in the lower extremities have been used but none based upon actual measurement of the lengths of the femur and tibia. A method of predicting growth based upon serial roent-

genographic measurements of the femur and tibia is presented, the operative technic described and results reported. A prediction chart was made based upon studies of growth in 700 children, 87 per cent of whom had residual paralysis of 1 limb and the other normal. This chart is illustrated. It is not an absolute index for estimating the effect of epiphyseal arrest but only a guide showing the average growth expectation at any given age. In making it, orthoroentgenograms of the femur and tibia of each child were taken at three to twelve month intervals. Curves were made to show the expected corrections at each age from stopping growth at the lower femoral or upper tibial epiphysis. This method of making predictions is described in detail and compared with four other methods of estimating the results of epiphyseal arrest. Advantages of this chart are that it is a single graph which may be used directly without computations. It provided the best predictions for the cases of arrest in this series.

Corrections and deformities following epiphyseal arrest are discussed. Absolute equalization is not always necessary, each patient being considered separately. Evaluation of the amount of lift needed to restore balance in the standing position is important in determining the necessary degree of correction. External measurements from the anterior superior iliac spine to the middle malleolus and the sole are made plus roentgenographic measurements of the bones. The amount of arrest required is determined from all these. The operation should not be deferred until arrest of both femoral and tibial epiphyses is necessary with a considerable discrepancy but one operation done at a younger age and the other when necessary to complete the equalization. These patients should be followed and both discrepancies and actual lengths of the extremities regularly recorded. Annual roentgenographic measurements of the extremities are desirable. Roentgenograms should be made of the wrists every six to twelve months to determine skeletal age, single examinations being unreliable.

The operative technic is discussed from the viewpoint of results. Careful following of this technic should minimize postoperative deformity and provide prompt epiphyseal arrest. 15 references. 5 tables. 11 figures.

(*Growth predictions based on the average of a large group of studied individuals failed to take into consideration the familial and individual growth characteristics of the patient in question.*—H. R. M.)

SUPRACONDYLAR SHORTENING OF THE FEMUR FOR LEG LENGTH INEQUALITY.

Robert Dunham Moore, University of Chicago Medical School, Chicago, Ill. Surg., Gynec. & Obst. 84:1087-94, June 1947.

The principles of leg shortening to equalize the length of the limbs are discussed, operative technic described, 5 illustrative cases presented and end results in 15 other cases summarized. The chief causes of this condition are summarized. More than an inch difference in length of the legs causes an impaired gait and other symptoms. Operation for equaliza-

tion by shortening the leg must be done in children near the end of the growth period to obtain accurate results. It is therefore done in girls of 12 or 13 and boys 14 or 15 years of age. Any angular deformity of the hip or leg must be corrected before the length equalization can be done. The greatest advisable correction of the lower femur is 3 inches as more may cause permanent weakness of the quadriceps. Lengthening of the shorter limb may precede shortening of the longer if there is more than 4 inches difference in length.

Operative shortening of the femur in the distal metaphysis is described. This operation differs from others only in location of the resection. A lateral 7 inch intermuscular approach to the lower end of the femur is used which is simple and minimizes trauma to the quadriceps. The resected segment is removed from the distal metaphysis above the condyle. This minimizes antagonistic muscular action at the osteotomy site, obtains better healing and plaster immobilization is shorter and more effective making the operation comparatively simple and safe.

Results of this operation one and a half to nine years afterwards are summarized. Weight bearing with support began in six to eight weeks and longest immobilization was sixteen and a half weeks. Power returned to the quadriceps soon after the plaster was removed, muscle weakness only lasting a normal time after immobilization. 14 references. 1 table. 6 figures.

(*A review of the published article reveals that the osteotomy described by the author was actually done in the lower portion of the diaphysis rather than through the metaphyseal region of the femur. The operation as described represents the usual site for the femoral shortening operation in most clinics today and does not therefore represent something new. If the femoral shortening procedure was actually carried out through the metaphyseal region adjacent to the epiphyseal line, many technical difficulties would be encountered due to the marked increase in the width of the bone at this point and would entail some possible damage to joint structures. In children of the age groups mentioned, no difficulty in healing is usually encountered with femoral shortening at any level. A lateral intermuscular approach is feasible regardless of the level at which the resection is made.* —H.R.M.)

References to Current Articles

Functional Aspects of the Abductor Muscles of the Hip. Verne T. Inman, University of California Medical School, San Francisco, Calif. J. Bone & Joint Surg. 29:607-19, July 1947.

A Method of Offsetting the External Rotation of Limbs in Traction. Robert M. Rose, Louisiana State University Medical School and Louisiana State Charity Hospital, New Orleans, La. J. Bone & Joint Surg. 29: 535, April 1947.

A Motor Driven Screw Holder and Screw Driver. George R. Dawson, Jr., Florence, S. C. J. Bone & Joint Surg. 29:527-30, April 1947.

Rupture of the Popliteal Fascia. Howard R. Dudgeon, Jr., Waco, Tex. J. Bone & Joint Surg. 29:526, April 1947.

A Handy Pin Inserter. George R. Dawson, Jr., Florence, S. C. J. Bone & Joint Surg. 29:526, April 1947.

External Rotation of the Leg in Poliomyelitis. Samuel C. Yachnin, New York State Reconstruction Home, Haverstraw, N. Y. J. Bone & Joint Surg. 29:415-22, April 1947.

The Mechanical Factor in the Genesis of Experimental Nervous Dystrophies (*Mekhanicheskiĭ faktor v geneze eksperimental'nykh nervnykh distrofiĭ*). L. F. Supron, The Belorussian Medical Institute, U.S.S.R. Khirurgiya No. 6, 20-23, 1947.

Unilateral, Congenital Synostosis of Lunate and Triangular Bones. George Hammond, Guthrie Clinic and Robert Packer Hospital, Sayre, Pa. Surgery 22:566-67, September 1947.

Apparatus For Rapid Construction of Molded Splints. Michael Gosis (Lt. Comdr., M.C., U.S.N.R.). Am. J. Surg. 73:634, May 1947.

Finder and Screw Driver Used in Driving Screws With a Drill. Irvin Stein, Philadelphia General Hospital, Philadelphia, Pa. Am. J. Surg. 74: 380-81, September 1947.

Common Shoulder Injuries. Diagnosis and Treatment. Harrison L. McLaughlin, New York, N. Y. Am. J. Surg. 74:282-95, September 1947.

Isolated Paralysis of the Serratus Magnus Following Surgical Procedures. Paul H. Lorhan, University of Kansas Hospitals, Kansas City, Kan. Arch. Surg. 54:656-59, June 1947.

Progress in Orthopedic Surgery for 1945. A Review Prepared by an Editorial Board of the American Academy of Orthopaedic Surgeons. XV. Fracture Deformities. Leonard T. Peterson, Washington, D. C. Arch. Surg. 54:660-67, June 1947.

Cineradiography in Orthopaedic Surgery. Leon Gillis, Queen Mary's (Roehampton) Hospital. Brit. M. J. 4516:140-41, July 26, 1947.

Aids to Bone Surgery. F. P. Fitz-Gerald, Royal Northern Hospital, London, England. Lancet 1:912, June 28, 1947.

The Early Treatment of Poliomyelitis. H. J. Seddon, Oxford, England. Brit. M. J. 4521:319-21, Aug. 30, 1947.

Lymph-Gland Biopsies for Suspected Bone and Joint Tuberculosis. An Analysis of 100 Consecutive Cases. G. P. Arden and J. C. Scott, Wingfield-Morris Orthopaedic Hospital, Oxford, England. Brit. M. J. 4515: 87-89, July 19, 1947.

Progress In Orthopedic Surgery for 1945. A Review Prepared by an Editorial Board of the American Academy of Orthopaedic Surgeons. XIX. Conditions Involving the Elbow, the Forearm, the Wrist and the Hand. Walter C. Graham, Santa Barbara, Calif.; XX. Conditions Involving the Spine and Thorax, Exclusive of those in the Lower Part of the Back. John R. Cobb, New York, N. Y.; XXI. Conditions Involving the Lower Part of the Back. R. Beverly Raney, Durham, N. C. Arch. Surg. 55:64-76; 76-87; 87-100, July 1947.

Progress in Orthopedic Surgery for 1945. A Review Prepared by an Editorial Board of the American Academy of Orthopaedic Surgeons. XIII. Neuromuscular Disorders Exclusive of Poliomyelitis. Winthrop M. Phelps, Baltimore, Md. Arch. Surg. 54:566-71, May 1947.

Progress in Orthopedic Surgery for 1945. A Review Prepared by an Editorial Board of the American Academy of Orthopaedic Surgeons. X. Infantile Paralysis. C. E. Irwin, Warm Springs, Ga. Arch. Surg. 54: 445-58, April 1947.

Infantile Paralysis. Research. J. A Toomey, Cleveland, Ohio. Arch. Surg. 54:459-76, April 1947. XII. Poliomyelitis. Convalescent Treatment and Related Subjects. Robert L. Bennett, Warm Springs, Ga. Arch. Surg. 54:476-82, April 1947.

44. Fractures

EFFECT OF PRISCOL ON THE HEALING OF FRACTURES (*Die Einwirkung von Priscol auf die Heilung von Frakturen*).

E. Bohm and G. Flyger, The Karolinksa Institute, Stockholm, Sweden. Acta. chir. Scandinav. 94:205-11, No. 3-4, 1946.

This study was a continuation of previous experiments on the same subject (effect of novocaine: see Bohm and Flyger, Acta chir. Scandinav. 89: 6-111, No. 11, 1943). The same kind of experimental material was used, which consisted of adult rats fed vitamin-sufficient food. The fractures were of the same type in all animals (supramalleolar fractures of the tibia). Priscol (Ciba), a vasodilator, in a 0.25 cc. dose intramuscularly, twice a day, produced in six days the same degree of hyperemia as novocaine. After ten days vascularization rose in a moderate degree, while in the novocaine-treated animals it reached the maximum. After fourteen days the priscol-treated rats showed further rise of vascularization, while the novocaine-injected animals began to exhibit a downward trend. After twenty-five days vascularization was at the maximal point in the priscol group, while in the novocaine group it was back to normal. This shows that novocaine has a more rapid healing action than priscol, probably due to addition of anesthetizing to the vasodilating effect.

Comparison of priscol-injected with control animals disclosed a more or less parallel course of healing (vascularization on the rise up to the twenty-fifth day). However, the vasodilation, vessel density, and new bone formation were more pronounced at any time after the sixth day in the priscol group than in the untreated animals. 6 references. 1 figure.

INTRAARTICULAR FRACTURES IN THE UPPER END OF THE TIBIA AND LOWER UPPER END OF THE TIBIA AND LOWER END OF THE FEMUR.

T. Olaussen, The Drammen Hospital, Norway. Acta chir. Scandinav. 94:407-29, No. 5, 1946.

Of the 59 cases treated at the author's hospital in 1931 to 1941, 28 were fractures with minor, or no dislocation, and presented no problem. Among 23 dislocation cases, 9 were depressed fractures and the rest, splitting fractures. The former were not operated on even when the depression was extensive. Treatment included fixation for a short time and early mobilization, followed by late weight-bearing. Four of these patients were cured; in the others no disability resulted but the knee showed a slight valgus in the joint and was weak.

The dislocated splitting fractures (14) were treated without operation, except 1 case. They healed in malposition, with a valgus or varus state of different degree. In 6 cases the ligaments were injured, 1 case showed complete disability.

The author concludes that operation should be resorted to more frequently (minor operations, without arthrotomy). In depressed fractures surgical interference is indicated in extreme depressions, in valgus and where lateral motion is defective, with a view to elevating the depressed articular surface. Operation may be postponed until other treatments prove ineffective, or even later. Consolidation of fracture does not interfere with efficiency of such operations.

In the above cases arthrosis deformans was of little importance. Check-up, both clinical and radiologic, of 47 of these patients showed 13 bad healings and 38 satisfactory ones. 22 references.

COMPARISON OF THE RESULTS FROM NON-OPERATIVE TREATMENT AND FROM OSTEOSYNTHESIS BY MULTIPLE NAILING OF MEDIAL FRACTURES OF THE COLLUM FEMORIS.

Nils Carlquist, Surgical Clinic in Lund, Sweden. Acta chir. Scandinav. 95:3-137, Suppl. 127, 1947.

A survey was made of 473 patients with fresh medium collum fractures treated by conservative or active methods. Over half were more than 70 years old. Conservative treatment comprised rest in bed, adjustment of the limb between sand bags, massage and passive motion. Active treatment consisted of prompt reduction under ether and immobilization by plaster cast or different forms of direct extension. A total of 73.7 per cent received active treatment on an average of three and a half days after injury. The conservatively treated group had a hospital mortality of 21.4 per cent and those actively treated had a 15.6 per cent mortality. Reexamination of 87 of the surviving patients showed that 13 of 14 conservatively treated cases had bony healing and 1 case pseudarthrosis. Osseous healing occurred in

53 of the 73 actively treated cases, the remainder having pseudarthrosis.

A series of 250 patients with recent medial collum fractures of the femur were treated by multiple osteosynthesis by Nystrom's method. Most of these patients were over 60 and 86 were over 80 years old. Early operation was performed when practicable, a little less than half being done the first week after injury. Frontal and lateral roentgenograms were made. Reduction was done on the extension table. Narrow triangular nails were used in the first 37 cases but proved inadequate and coarse quadrangular nails were used in the remainder. The simplicity of this method is emphasized. The long driving rod and direction rod facilitate driving in the nail which is done free hand. The primary mortality was 7.2 per cent. Only 83 patients were available for reexamination after two years but 88 per cent of these had osseous healing. Capital necrosis was present in 41 per cent. Complications connected with the operation such as slipping or perforation by nails occurred more frequently with capital necrosis.

Comparison of results of the unnailed and nailed treatments show the primary mortality to be twice as high for the former. Pneumonia or thrombophlebitis were the most common causes of death in both groups but especially in unnailed cases. It is believed that early mobilization in bed and early ambulation of the nailed patients were major factors in low mortality. Follow-up of patients after they left the hospital showed the mortality among unnailed patients to be about twice as much as with the nailed, probably because of the greater strain of nonoperative methods on elderly patients. The operative method was shown to provide better fixation and less collum absorption than nonoperation. There was no significant difference in occurrence of capital necrosis in the two groups, chiefly because this is caused by injuries at the time of fracture. This study indicated the nailed method of treatment to be definitely superior. 119 references. 24 tables. 52 figures.

(*Bony union in* 13 *of* 14 *surviving patients who were treated conservatively is considerably higher than one would expect. This article further emphasized the known fact that the type of treatment probably has no bearing on the percentage of aseptic necroses which will be encountered.*—H.R.M.)

OSTEOSYNTHESIS OF INTERTROCHANTERIC AND PERTROCHANTERIC FRACTURES OF THE FEMUR.

Hugo Aronsson, Sabbatsberg Hospital, Stockholm, Sweden. J. Bone & Joint Surg. 29:637-43, July 1947.

Wire traction through the lower end of the femur or tuberosity of the tibia is the usual treatment for intertrochanteric and pertrochanteric fractures of the femur. The disadvantages of traction are discussed. The patients are usually aged and lengthy hospitalization of four or five months or more should be avoided.

Results of use of the operation of osteosynthesis in a series of 30 patients to avoid these disadvantages are presented. The method differs from

osteosynthesis in subcapital and transcervical fractures of the femur and is described. A Smith-Petersen three-flanged nail with a head which could be rotated and a transverse screw through the head was used. The rotary head enables adjustment of the transverse channel in the head of the nail after it has been driven in so that necessary diametric support will be provided for the screw. The fixation will otherwise be defective. This combination prevented possible coxa vara at the fracture site and outward rotation of the lower fragments. The wire guide is inserted lower on the femur in this method to provide a properly oblique position for the nail. The technic of so inserting the nail as to avoid damaging the cortex is described. In order to obtain satisfactory fixation, the nail should have a sharply oblique position in the neck and be inserted without splintering the bone. The length of the nail should be accurately measured so that the point lies 1 cm. below the joint surface of the head of the femur and the transverse channel in the head be so placed that the screw will pass diametrically through the femur with support in both inner and outer cortices.

This operation is no more serious than others used for treatment of fractures of the neck of the femur and gives satisfactory internal fixation with early mobilization in selected cases. Nursing is made easier, the patient moves about and walks sooner and hospitalization is decreased. Satisfactory position of the fracture during manipulated reduction on a fracture table is an essential prerequisite for osteosynthesis but about 80 per cent of intertrochanteric fractures of the femur are suitable for it. This series had a mortality of 10 per cent, 2 patients being over 80 and dying of general arteriosclerosis and terminal bronchopneumonia. This series was too small for any real conclusions concerning reduction in mortality. 9 figures.

(*The degree of fixation afforded by the one transfixing screw appears questionable. The use of a nail and attached plate, preferably fused into a single unit would seem to insure greater security.*—H.R.M.)

TREATMENT OF MALLEOLUS FRACTURES WITHOUT IMMOBILIZATION BY MEANS OF LOCAL NOVOCAINE INJECTIONS AND BY WALKING FROM THE FIRST DAY AFTER FRACTURE (*Lechenie pereloma lodyzhki bez immobilizatsii mestnymi in'ektsiyami novokaina i khod'boĭ s pervogo dnya posle pereloma*).

B. Stoich, Zagreb, Yugoslavia. Khirurgiya No. 1, 71-74, 1947.

Injections of novocaine (pure, without adrenaline admixture), in a 1 per cent or 0.5 per cent solution, proved an excellent means of healing malleolus fractures without immobilizing the patient. The drug was first introduced into the region above the malleolus (both subcutaneously and intraperiosteally), then injected into the malleolus region, into both tissues, as above. No injection was made into the fracture slit. A dose of 15 to 20 cu. cm. was found to be sufficient when one malleolus was fractured. In bimalleolar fractures 15 cu. cm. on each side were effective, using only a 0.5 per cent solution. A roentgenogram was taken after the injection. Besides

the usual dorso-ventral and latero-medial positions, a third position was added; namely, the foot was pronated or supinated to match the position of the injury. This was necessary in order to detect any possible tears in the tendon of the tibio-fibular joint or any dislocation of the malleolus. Where such damage was shown, immobilization was necessary.

The injections were repeated for five to six days, once a day, then twice more with one-day intervals.

A total of 85 malleolar fractures were cured by this method. Three of these were bimalleolar fractures. Constant roentgen ray control had to be used, so that the foot could be put in a cast should any callous tissue begin to form.

GUN-SHOT WOUNDS OF THE THIGH (*Ognestrel'nye raneniya bedra*).

I. S. Vengerovskiĭ, Evacuation Hospital, U.S.S.R. Khirurgiya No. 1, 54-64, 1947.

During the three and one-half years of World War II 8,340 cases of wounded thigh had passed through the author's hospital. Of these 22.6 per cent had a fracture of the femur and 57 patients suffered a concealed fracture of the femur. The fractures were localized in the upper, middle and lower parts of the femur in 21.6 per cent, 61.8 per cent and 17.1 per cent, respectively. The types of fracture included fragmentary fractures, with infection and considerable destruction of soft tissues (72.4 per cent); oblique and transverse fractures (20.4 per cent); perforated marginal fractures (7.2 per cent).

Contrary to modern practice, resection of the wound was not always done at the front-line hospital. Complete resection was performed in 70.2 per cent, the entry opening was resected in 19.7 per cent, of fractures. In 98 per cent the wound received no treatment at the field hospital. The immobilization was not always correctly and thoroughly carried out. Kramer's braces, often of insufficient length, were used in many cases, which meant insufficient immobilization and incomplete protection under transport conditions. In 6 per cent of cases no immobilization was applied, because the fracture was merely suspected, or overlooked.

This situation called for surgical interference and secondary treatment of wounds at the evacuation hospital. An average of 48.3 per cent of fractures were thus treated (their number rose from 16.2 per cent in 1942 to 91.4 per cent in 1944).

The experience of these years had led to the following conclusions with regard to femur fractures:

1. During the treatment constant roentgen ray control is necessary. In the absence of dislocation the picture helps discovering the fracture.

2. Where infections complicate the fracture, secondary treatment is absolutely essential (wide resection of the wound, removal of fragments,

placement of contrapertures, one phase reposition of fractured parts and fixation by means of a coxite gypsum bandage).

3. The reposition is done under control of a roentgen ray screen. Where shortening is noted, skeleton stretching is applied for two to three weeks prior to reposition. Examinations and checkups are indispensable. Concealed fractures are treated by the stretching method.

4. Good care, antiseptic treatment, physical culture, combined with local surgical and orthopedic measures, are of utmost importance for final success. These have to be provided for from the first day of admission to the hospital.

TREATMENT OF GUN-SHOT FEMUR FRACTURES INCORRECTLY GROWN TOGETHER.

(*Lechenie nepravil'no srosshikhsya ognestrel'nykh perelomov bedra*). *V. D. Bantov.* Khirurgiya No. 1, 64-70, 1947.

According to the pooled hospital data, 13.2 per cent of army discharges due to limb injury were cases of fractures incorrectly grown together. The actual number would be much higher if it included also dislocation of the fragments (51 per cent of the total). The causes are: (1) no roentgenogram, or a picture taken in one position only; (2) insufficient use of the stretching apparatus; (3) untimely change of the primary cast; (4) placing in a cast without taking into account the location of the fracture; (5) insufficiently extensive use of skeleton stretching; (6) delayed setting of fragments (fear of infection). In the author's hospital the above operation had been performed on 145 patients, in spite of purulent infection. Of these, 82 required amputation (7 deaths) and 63 underwent resetting of fragments. The method had to be carefully chosen in each individual case. The operation was done in two stages: (a) removal of sequestrated parts and foreign bodies; (b) resetting done after the inflammation had subsided. Chronic infection is not a contraindication to resetting. The fragments must be sutured or skeletal stretching applied. Success depends on thoroughness and satisfactory pus drainage.

References to Current Articles

Stretching Apparatus Used in Placing Gypsum Coxite Bandages on Lower Limbs. (*Apparat s vytyazheniem dlya nalozheniya gipsovykh koksitovykh povazok na nizhnie konechnosti*). P. Vysotskiĭ. Khirurgiya No. 1, 84-85, 1947. This apparatus is simple, easy to handle, light and inexpensive. An π-shaped metal-rod stand rests on a board 25 to 30 cm. wide and 1.5 m. long. The distance between the legs is 130 cm., the height 75 cm. The metal legs are encased in wooden pipes which can rotate about the legs. The horizontal bar supports the patient's limb in any desired position, with the aid of bandages. The patient's pelvis on the side of the bandaged limb is supported by the board. The stretching is done by rotating the wooden tube by means of

a rope and a handle. The limb is turned by shifting the peripheral end of the apparatus to the right or left, as needed. This apparatus can be constructed at any surgical hospital.

Arthrodesis of the Hip for Ununited Fractures. A. Bruce Gill, Philadelphia, Pa. J. Bone & Joint Surg. 29:305-309, April 1947.

The Treatment of Fractures of the Femur in a Field Hospital. Ivar Alvick, Sandvika, Norway. J. Bone & Joint Surg. 29:422-23, April 1947.

The Whitman Reconstruction Operation for Complications of Fracture of the Neck of the Femur. Arthur Krida, New York, N. Y. J. Bone & Joint Surg. 29:310-12, April 1947.

March Fractures. James G. Donald (Capt., M.C., A. U. S.) and William T. Fitts, Jr. (Capt., M.C., A.U.S.). J. Bone & Joint Surg. 29:297-300, April 1947.

The Relationship of the Adrenal Glands to Changes in Urinary Non-Protein Nitrogen Following Multiple Fractures in the Forced-Fed Rat. Dwight J. Ingle, Elizabeth O. Ward and Marvin H. Kuizenga, Research Laboratories, The Upjohn Co., Kalamazoo, Mich. Am. J. Physiol. 149:510-15, May 1947.

The Mechanical Fixation of Fractures of the Long Bones. Kenneth W. Starr, Sydney, Australia. Australian & New Zealand J. Surg. 16:248-52, April 1947.

Fracture of the Olecranon Process of the Ulna. Francis M. McKeever, Los Angeles, Calif. and Ronald M. Buck, St. Joseph, Mo. J. A. M. A. 135:1-5, Sept. 6, 1947.

Blade-Plate Fixation. Irwin A. Jaslow, Guthrie Clinic, and Robert Packer Hospital, Sayre, Pa. J. Bone & Joint Surg. 29:814-16, July 1947.

Secondary Closure of Wounds Associated with Compound Fractures. James O. Barr (Major, M. C., A. U. S.). J. Bone & Joint Surg. 29:376-80, April 1947.

A Modification of the Blade-Plate for the Treatment of Intertrochanteric Fractures of the Hip. Robert Glen Bronson, Minneapolis General Hospital, Minneapolis, Minn. J. Bone & Joint Surg. 29:537, April 1947.

A Simple Leg Holder for Hip-Nailing Operations. Edward Parnell, Albuquerque, N. M. J. Bone & Joint Surg. 29:536-37, April 1947.

An Improved Rotating Stirrup for Use in the Treatment of Fractures of the Femur with Skeletal Traction. Gerald C. Gill, Oakland, Calif. J. Bone & Joint Surg. 29:531-34, April 1947.

Knee Movement Following Fractures of the Femoral Shaft. John Charnley, Manchester, England. J. Bone & Joint Surg. 29:679-86, July 1947.

Oblique Subcervical (Reverse Intertrochanteric) Fractures of the Femur. Louis T. Wright, Harlem Hospital, New York, N. Y. J. Bone & Joint Surg. 29:707-10, July 1947.

An Operation for Old Unreduced Bennett's Fracture. John R. Vasko, Oakland, Calif. J. Bone & Joint Surg. 29:753-56, July 1947.

Stress Fracture of a Metatarsal in a Young Child. Lewis D. Rutter, Salford Royal Hospital, Salford, England. Brit. M. J. 4514:55, July 12, 1947. Reports a case of stress fracture of the right metatarsal with no

history of trauma in a child 4 years old, the youngest patient with this type of fracture reported. 3 references. 2 figures.

Transplantation of Bone Joined to the Feeding Muscular Stem in Nonhealing Gunshot Fractures with Extended Bone Defect. Preliminary Communication. (*Peresadka kosti na pitayushcheĭ myshechnoĭ nozhke pri nesrosshikhsya perelomakh ognestrel'nogo proiskhozhdeniya s defektom kosti na protyazhenii. Predvaritel'noe soobshchenie*). A. G. Lapchinskiĭ, Evacuation Hospital, Izhevsk, U. S. S. R. Khirurgiya No. 2, 68-72, 1947.

New Type of Fastener For Joint Separations and Oblique Fractures. Anthony J. Pisani, Bellevue Hospital, New York, N. Y. Am. J. Surg. 73: 624-28, May 1947.

Monteggia Fracture. G. J. Curry, Hurley Hospital, Flint, Mich. Am. J. Surg. 73:613-617, May 1947.

Fractures of the Os Calcis. Preliminary Report. A. H. Whittaker, Detroit, Mich. Am. J. Surg. 74:378-79, September 1947.

Fracture Fixation by Transarticular Pin. A Technic for Control of Severe Ankle Fractures. M. John Rowe, Tichenor Orthopedic Clinic, Long Beach, and Ross Sutherland, Los Angeles,Calif. Am. J. Surg. 74:24-26, July 1947.

Failure in Cortical Bone-Grafting. V. H. Ellis, H. H. Langston and J. S. Ellis, Cambridge and London, England. Lancet 2:128-30, July 26, 1947.

Milkman's Syndromes. Irving B. Brick and Rollin F. Bunch, Walter Reed General Hospital, Washington, D. C. New England J. Med. 237:359-63, Sept. 4, 1947.

Experiences with Bone Grafting Procedures for the Treatment of Battle Casualties and War Injuries. Byron B. King (Lt. Col., M.C., A.U.S.), U. S. Army General Hospital, Camp Edwards, Mass. Am. J. Surg. 74:129-35, August 1947.

Gangrene (Noninfective) Complicating Fractures. George H. Yeager, University of Maryland Medical School, Baltimore, Md. Ann. Surg. 126: 98-106, July 1947.

Osteotomy in Treatment of Fractures of the Hip. Eslie Asbury, Cincinnati, Ohio. Arch. Surg. 55:51-57, July 1947.

Effects of Thrombin Injection Into Hematoma Enveloping Fractures of Humerus in Rabbits. Earl P. Lasher and Gordon B. O'Neil, Seattle, Wash. Northwest Med. 46:361-65, May 1947.

General Considerations in Treatment of Ankle Fractures. Donald E. Moore, Willamette Medical Society, Eugene, Ore. Northwest Med. 46: 611-14, Aug. 1947.

45. Dislocations

SURGICAL TECHNIC IN COMMON DISLOCATION OF THE THUMB (*Sur l'operation de la luxation habituelle du pouce*).

S. von Stapelmohr, The Norrköping Hospital, Sweden. Acta chir. Scandinav. 94:379-83, No. 3/4, 1946.

A 16 year old boy had both thumbs dislocated and was operated on successfully (motor function completely restored). The healing took one month and a check-up three months later showed satisfactory results. The technic used by the author consisted of two incisions (radial and ulnar) at the level of the basal joint. The tendons of the abductor, flexor and adductor pollic. brev. muscles were then isolated and shifted closer to the palm under the head of the first metacarpal bone. A tunnel was bored with a Lister sound through the vaginal ligament below the tendon of the flexor. All three tendons were then passed into this tunnel and held together in a fixed position by means of a cuff. The latter was made of a graft from the fascia lata transplanted freely into the tunnel through the vaginal ligament and wrapped around the tendons. This shift of the tendons toward the palm prevented completely dorsal luxation of the thumb. The cuff was sutured, the wound closed, and the thumb immobilized in a semi-flexed position for two weeks. Thereafter mobilization of the thumb was begun.

The tendons involved are intimately connected with the glenoid fascias of the lateral ligaments by which the glenoid fibrocartilage is attached to the head of the first metacarpal bone. When the glenoid fascias become loose, luxation takes place. In order to preserve the correct position of the cavity of the basal joint these fascias must be reinforced. The author has found that the cuff gives sufficient support to the basal joint by strengthening the two lateral ligaments (ligamenta capituli arciformia volaria).

References to Current Articles

An Instrument for Use in the Bankhart Operation for Recurrent Dislocation of the Shoulder. George I. Reiss (Major, M. C., A. U. S.). J. Bone & Joint Surg. 29:812-13, July 1947.

Diagnosis and Treatment of Recurrent Dislocations of the Shoulder. Ross Robertson and W. J. Stark (Capt., M.C., R.C.A.), Shaughnessy Hospital, Vancouver, B. C., Canada. J. Bone & Joint Surg. 29:797-800, July 1947.

Arthroplasty of the Hip for Congenital Dislocation in Children. Paul C. Colonna, University of Pennsylvania Medical School, Philadelphia, Pa. J. Bone & Joint Surg. 29:711-22, July 1947.

Recurrent Posterior Dislocation of the Shoulder. J. C. R. Hindenach, London, England. J. Bone & Joint Surg. 29:582-86, July 1947.

46. Bones

BENIGN CENTRAL CARTILAGINOUS TUMORS OF BONE.

Bradley L. Coley and Anthony J. Santoro, Memorial Hospital, New York, N. Y. Surgery 22:411-23, September 1947.

In their study of benigh central tumors of bone derived from cartilage, the authors confine themselves to a discussion of two groups: (1) central chondroma; (2) benign chondroblastoma. These comprise 22 examples of the former and 8 of the latter, observed in the Bone Tumor Department of Memorial Hospital.

Both are essentially diseases of youth and early adult life. Sex is of no apparent importance in either. In both the long bones are predominantly involved, the disease occurring mainly within the bone.

In the central chondroma group the phalanx was involved in one-third of the cases. Here, especially, pathologic fracture is often the incident which first attracts attention to the condition, and it may follow a very trivial trauma.

While as yet no satisfactory explanation of the origin of central chondroma has been advanced, disturbances in cartilage of a developmental nature may be an important factor. At operation the tumor may be readily identified. It presents a solid whitish, firm mass, completely filling the cavity, and on curettage has a slightly gritty "feel". While not encapsulated it is usually rather definitely circumscribed. The histologic appearance is characteristic. Hyaline cartilage predominates. As is proper when dealing with any central bone lesion, the microscopic study should include all of the tissue removed.

While the roentgenographic diagnosis is usually possible on the basis of a circumscribed area of radiolucency in the end of a long bone, in order to avoid error, the authors recommend that any accessible central bone lesion should be subjected to exploration and surgical extirpation. They emphasize the importance of the completeness of the latter since recurrences have followed incomplete removal.

For lesions of the rib, fibula and scapula the authors recommend resection of the entire tumor-bearing area. When a considerable portion of the thickness of the shaft of an essential long bone is involved it is important to utilize bone chips obtained from the ilium, or pencil grafts from the tibial cortex. Occasionally, when one or more recurrences have followed curettage, a segmental resection is an alternative to an amputation. An analysis of the authors' series of central chondromas discloses that surgery alone has yielded uniformly good results.

While the second group, benign chondroblastoma, has in the past generally been termed "Codman's epiphyseal chondromatous giant cell tumor" in the authors' opinion it is not a true giant cell tumor but rather one of cartilaginous origin. It is derived from cartilage germ cells or chondroblasts and is believed to begin in the epiphysis and to involve the metaphysis secondarily. In this group trauma has not been shown to be of etiologic importance.

As to treatment, while these tumors have proved to be somewhat radiosensitive, and roentgen therapy might be accepted as the method of choice, the authors feel that since an operation is usually necessary to establish the diagnosis, and since conservative surgical measures have yielded satisfactory results, in this second group also surgery should be the method of treatment employed.

In conclusion the authors sound a warning against regarding chondroma and chondroblastoma as inconsequential conditions that can safely be ignored, and emphasize the importance of surgical removal whenever possible. 10 references. 5 tables. 9 figures.

Author's abstract.

A PENICILLIN-TREATED SERIES OF CASES OF OSTEOMYELITIS IN CHILDHOOD.

T. Twistington Higgins, Denis Browne and Martin Bodian, Hospital for Sick Children, London, England. Brit. M. J. 4508:757-61, May 31, 1947.

Penicillin has produced marked improvement in staphylococcal infections of the bones and joints but there is no agreement on dosage or the possible necessity of surgery in addition. An analysis of the results of penicillin therapy in three groups of cases of osteomyelitis and suppurative arthritis (see group 2) in childhood is reported. The first group comprised 31 unselected cases of acute osteomyelitis of one to three weeks' duration. Cultures of coagulase-positive Staphylococcus aureus, coagulase-negative Staph. albus, and hemolytic streptococcus were obtained from the blood, joints or abscesses of these cases. All organisms were penicillin sensitive. Radiologic changes were all out of proportion to the clinical and bacteriologic findings but often entirely cleared up without major surgery. It appeared that these radiographic changes indicated disorganization of calcium deposits in live bone rather than death of the bone. Further study of this point is needed.

Intramuscular injections of penicillin were given every four hours on a basis of 1,000 units per pound of body weight every twenty-four hours. This dose was doubled in 2 cases without any change in result. It was found best to continue this treatment for three weeks though the disease might not last over two weeks. The involved limb was so immobilized in plaster as to facilitate inspection and aspiration of the area. The arm was only bandaged to the side in cases of arthritis of the shoulder. Treatment of these cases differed from the usual in that pus outside the bone was aspirated as indicated by re-forming pus, usually daily for a few days and then less frequently. The aspirated pus was replaced by 2,000 to 5,000 units of penicillin. This might not be necessary but seemed reasonable and was harmless. Pus finally stopped forming and healing without sinus formation was accomplished. This conservative treatment avoided the complications which occur when a penicillin-sensitive infection is complicated by

nonsensitive organisms. Many children were admitted with severe pain, high fever and sometimes comatose but were happy and playing again within forty-eight hours. Soft-tissue swellings without pus usually disappeared in four or five days. The blood became sterile in four to seven days and abscess cavities healed in less than three weeks. Functional results were perfect in all but 1 case in which the joint was not aspirated and penicillin given for only seven days.

The second group consisted of 4 unselected cases of acute suppurative arthritis. All were treated by aspiration of the joint and replacement of the pus by penicillin. Use of the limb was permitted as desired with no prolonged fixation or extension. All patients completely recovered. The third group was 5 cases of chronic osteomyelitis, three of a rib, one of the calcaneus and one of the upper ilium. These cases were selected from those in whom the infected bone could be removed without functional damag. The infected bone was removed with a margin of healthy bone, granulations scraped away and penicillin powder or solution instilled. The wound was then completely sutured to avoid contamination with penicillin-resisttant organisms. Pressure dressings were applied and left for two weeks. The abscess cavity was not obliterated, the object being to obtain healing by organization of the blood-clot sterilized by penicillin. When the dressings were first changed, healing was either complete or advanced enough to protect the deeper part of the wound from infection. All wounds were dry in three weeks and have remained dry for nine to thirty months. The local or general use of penicillin was unavailing in these cases when all infected bone and soft tissue could not be removed. There was no mortality in any group. 8 references. 3 tables.

ON LUNATOMALACIA (KIENBOCK'S DISEASE). A CLINICAL AND ROENTGENOLOGICAL STUDY, ESPECIALLY ON ITS PATHOGENESIS AND THE LATE RESULTS OF IMMOBILIZATION TREATMENT.

Folke Sahl, Orthopedic Clinic, Lund, Sweden. Acta. chir. Scandinav. 95:3-133, Suppl. 126, 1947.

The anatomy of the wrist and pertinent literature is reviewed. Studies were made of 184 patients with lunatomalacia to determine if it was or was not the result of a fracture and results obtained by conservative immobilization treatment. These cases are all from the University Clinic at Lund, Sweden. There are 9 bilateral cases, hence 193 wrists. Ninety-six cases are from the surgical department, 62 from the orthopedic department and 22 from the roentgenogram files of cases seen by private practitioners. Cases cover the period 1910 to 1943 inclusive but most of the cases were seen since 1930.

The radiographic appearance of a fully developed lunatomalacia is well known but it is not known when the various features seen in the radiograph first appear, whether the lunate first becomes flattened and deformed

or whether the disease commences with disturbances in the calcium content of the bone or structural changes. Recent compression fractures in other bones appear in roentgenograms as a density line but compression fractures in the lunate have been described as fine fissure or rarefaction lines. In this series however, the fracture appeared as a density line in 4 cases. These cases develop like any untreated or nonhealing fractures, a secondary resorption occurring in the fracture zone and the primary density line gradually becoming rarefied. Sclerosis of the bone gradually develops and is usually visible in the radiograph after about three months. Weakness of the devitalized bone facilitates development of secondary fractures. Analysis of the radiographic primary material indicates lunatomalacia is a stage in the development of a nonhealing fracture. Compression fracture has been the only known cause of lunatomalacia and it is suggested that the term fracture of the lunate be substituted for this and other names of the disease.

Late results obtained by immobilization treatment, and by removal of the lunate bone are discussed. The duration of immobilization was found to have considerable effect upon late results. Bad results were obtained in more than 50 per cent of cases when immobilized for less than two months but only in 1 of every 6 cases when immobilization lasted over two months. Normal or practically normal structure is regained in about 50 per cent of cases immobilized over two months, best results being obtained in patients under 25 years old. Arthritis deformans is uncommon among patients immobilized for long periods.

These studies showed that much better results were obtained by long conservative immobilization than by extirpation of the lunate. The operation is difficult, crippling and not considered justified. 189 references. 30 tables. 51 figures.

(*The term osteochondrosis is preferred for any one of the degenerative processes of bone due to certain types of vascular disturbance. Fracture is one of the causes of osteochondritis of the carpal lunate, probably the most common cause, probably not the only cause. Variations in the selection and analysis as well as the types which come to a given clinic can easily account for differences in causation as well as interpretation of the lesion. One hundred and eighty-four cases of fracture of the lunate, with or without degenerative changes is an enormous number for most large fracture services.*—M.B.H.)

References to Current Articles

Some Surgical Aspects of Osteoid Osteoma. George T. Wallace (Major, M.C., A.U.S.), Army & Navy General Hospital, Hot Springs National Park, Ark. J. Bone & Joint Surg. 29:777-80, July 1947.

Osteoid Osteoma. Ignacio Ponseti and Chester K. Barta, State University of Iowa Hospitals, Iowa City, Iowa. J. Bone & Joint Surg. 29:767-76, July 1947.

Unclassified Premature Cessation of Epiphyseal Growth About the Knee Joint. Otto C. Kestler, New York, N. Y. J. Bone & Joint Surg. 29: 788-97, July 1947.

Osteitis Pubis. Norborne B. Powell, College of Medicine, Baylor University, Houston, Tex. J. Bone & Joint Surg. 29:785-87, July 1947.

Subperiosteal Giant-Cell Tumor. John T. Hodgen and Charles H. Frantz, Blodgett Memorial Hospital, Grand Rapids, Mich. J. Bone & Joint Surg. 29:781-84, July 1947.

Roentgenographic Features of Metastases of a Retinoblastoma to the Long Bones. Ralph E. Bowen, School of Medicine, University of Arkansas, Fayetteville, Ark. J. Bone & Joint Surg. 29:805-808, July 1947.

Reconstruction of Defects of the Tibia and Femur with Apposing Massive Grafts from the Affected Bone. John J. Flanagan (Major, M.C., A.U.S.) and Henry S. Burem (Capt., M.C., A.U.S.), Kennedy General Hospital, Memphis, Tenn. J. Bone & Joint Surg. 29:587-97, July 1947.

Calcified Medullary Defects in Bone. Albert Barnett Ferguson, Jr., Peter Bent Brigham Hospital, Boston, Mass. J. Bone & Joint Surg. 29:598 602, July 1947.

Metacarpal Reconstruction. J. William Littler (Major, M.C., A.U.S.), Cushing General Hospital, Framingham, Mass. J. Bone & Joint Surg. 29: 723-37, July 1947.

Osteochondritis Dissecans of the Talus. R. Beverley Ray, Memphis, Tenn. and Edward J. Coughlin, Jr., Williamstown, Mass. J. Bone & Joint Surg. 29:697-706, July 1947.

The Posterolateral Approach to the Femur. George H. Marcy (Major, M.C., A.U.S.), Twenty-Third United States Army General Hospital. J. Bone & Joint Surg. 29:676-78, July 1947.

Solitary Unicameral Cyst of the Os Calcis. Charles C. Verstandig, Connecticut State Hospital, Middletown, Conn. New England J. Med. 237: 21-22, July 3, 1947.

Organizers and the Growth of Bone. Pierre Lacroix, University of Louvain, Louvain, Belgium. J. Bone & Joint Surg. 29:292-96, April 1947.

The "Latch" Graft. Peter-Cyrus Rizzo (Lt. Col., M.C., A.U.S.) and Otto Lehmann (Capt., M.C., A.U.S.), Fletcher General Hospital, Cambridge, Ohio. J. Bone & Joint Surg. 29:354-58, April 1947.

The Treatment of Injuries to the Tarsal Navicular. A. Jackson Day, Major, M.C., A.U.S.), Fitzsimmons General Hospital, Denver, Colo. J. Bone & Joint Surg. 29:359-66, April 1947.

Humerus Varus Following Birth Injury to the Proximal Humeral Epiphysis. Leo S. Lucas and Joseph H. Gill, Shriner's Hospital for Crippled Children, Portland, Ore. J. Bone & Joint Surg. 29:367-69, April 1947.

Primary Lymphangioma of the Ilium. William H. Bickel and Albert C. Broders, Mayo Clinic, Rochester, Minn. J. Bone & Joint Surg. 29:517-22, April 1947.

Osteochondritis of the Supratrochlear Septum. W. T. Ross, Johannesburg, South Africa. J. Bone & Joint Surg. 29:514-16, April 1947.

Chondrodystrophia Calcificans Congenita. Theodore H. Vinke and F. Paul Duffy, College of Medicine, University of Cincinnati, and Cincinnati Children's Hospital, Cincinnati, Ohio. J. Bone & Joint Surg. 29:509-14, April 1947.

Renal Rickets. J. L. Richardson, University of Illinois College of Medicine, Chicago, Ill. J. Bone & Joint Surg. 29:503-508, April 1947.

Renal Osteitis Fibrosa Superimposed on Senile Osteoporosis. George W. Cottrell, University of Oregon Medical School, Portland Ore. J. Bone & Joint Surg. 29:491-503, April 1947.

Osteoid Osteoma Associated With Changes in Adjacent Joint. Mary S. Sherman, University of Chicago, Chicago, Ill. J. Bone & Joint Surg. 29: 483-90, April 1947.

The Use of Homogenous Bone Grafts. A Preliminary Report on the Bone Bank. Leonard F. Bush, New York Orthopedic Hospital, New York, N. Y. J. Bone & Joint Surg. 29:620-28, July 1947.

The Repair of Defects of the Radius with Fibular Bone Grafts. Richard C. Miller (Capt., M.C., A.U.S.) and George S. Phalen (Lt. Col., M.C., A.U.S.). J. Bone & Joint Surg. 29:629-36, July 1947.

The Use of Absorbable Substances to Obliterate Bone Cavities and as Hemostatic Agents in Operative Procedures on Bones and Joints. Joseph Buchman and John E. Blair, New York, N. Y. J. Bone & Joint Surg. 29:650-58, July 1947.

Cryptococcus Neoformans Infection (Torulosis) of Bone. Claran H. Jesse, Los Angeles County General Hospital, Los Angeles, Calif. J. Bone & Joint Surg. 29:810-11, July 1947.

A Sling for Use in Legg-Perthes Disease. Clarence H. Snyder, Grand Rapids, Mich. J. Bone & Joint Surg. 29:524-26, April 1947.

Tumors of the Skeletal System. Pathological Aspects. Henry L. Jaffe, Hospital for Joint Diseases, New York, N. Y. Bull. New York Acad. Med. 23:497-511, September 1947.

Subtotal Resection of the Shoulder Blade in a Case of Giant Osteochondrosarcoma (*Sluchaĭ subtotal'noĭ resektsii lopatki po povodu gigantskoĭ osteokhondrosarkomy*). A. P. Yurikhin, The Kuibyshev Medical Institute, U.S.S.R. Khirurgiya No. 4, 66-67, 1947.

The Treatment of Primary Malignant Bone Tumors of the Humerus. G. E. Haggart, Lahey Clinic, Boston, Mass. S. Clin. North America 27:717-28, June 1947.

The Preoperative Management of Malignant Bone Tumors. G. E. Haggart and Frank L. Shipp, Lahey Clinic, Boston, Mass. S. Clin. North America 27:729-36, June 1947.

Differential Diagnosis of Cystic Lesions of Bone. James W. Toumey, Lahey Clinic, Boston, Mass. S. Clin. North America 27:737-54, June 1947.

Brucellosis Osteomyelitis. Report of Two Cases in Which Shafts of the Long Bones Were Involved. George H. Lowe, Jr. and Paul R. Lipscomb, Mayo Foundation, Rochester, Minn. Surgery 22:525-29, September 1947.

Urethane and Stilbamidine in Multiple Myeloma. Nils Alwall, Lund University, Sweden. Lancet 2:388-89, Sept. 13, 1947.

47. Joints

TROCHANTERIC ARTHROPLASTY IN THE TREATMENT OF UNUNITED FRACTURES OF THE NECK OF THE FEMUR.

Philip D. Wilson, New York, N. Y. J. Bone & Joint Surg. 29:313-27, April 1947.

This operation is not recommended as the necessary treatment for all ununited fractures of the femoral neck, as bone grafting and upper femoral osteotomy have given excellent results. This or a similar operation is necessary, however, when there is necrosis of the head of the femur or extensive absorption of the neck.

The author has found trochanteric arthroplasty to give good results in a series of 8 cases. The operation is described in detail. A Smith-Petersen incision is used, the upper end of the great trochanter exposed and the portion with the glutaeus medius and minimus attachments removed. The fragment of the trochanter is as small as practicable for later transplant to the femur. The head and neck of the femur are then removed, the upper end of the shaft mobilized, reshaped, covered with a vitallium cup or mold and placed in the acetabulum. Care to obtain maximum stability at this point is most important. The trochanteric fragment and attached muscle is then transplanted to the shaft of the femur.

Following this operation, patients are free of pain and able to walk, some with an approximately normal gait. There is an average shortening of about 3/4 inch. Advantages of this operation are that elimination of the femoral neck simplifies hip function and reduces instability by substituting a direct vertical thrust in the femoral axis for an angular thrust. A more ample blood supply is also present in the trochanter than the neck of the femur so there is less likelihood of postoperative bone absorption. The major disadvantage of this operation is a tendency to early postoperative instability of the hip and the necessity of guarding against luxation. It is expected that this operation will also be of value in other pathologic conditions of the hip, especially when accompanied by loss of the femoral head and neck. 30 figures.

(*The basic operations were described by Whitman* (*Surg., Gynec. & Obst.* 32:479, *June* 1921) *and by Colonna* (*J. Bone & Joint Surg.* 17:110, 1935). *Wilson has added the vitallium cup. Smith-Petersen uses a similar procedure, but places more emphasis on reaming the acetabulum to provide greater stability for the vitallium mold* (*J. Bone & Joint Surg.* 29:41, *January* 1947).—M.B.H.)

A CONTRIBUTION TO THE SURGICAL TREATMENT OF OSTEOARTHRITIS OF THE HIP-JOINT. A CLINICAL STUDY.

Herman G. Gade, University Clinic, Oslo, Norway. Acta. chir. Scandinav. 95:9-290, Suppl. 120, 1947.

The history of resections of the upper end of the femur and the most important forms of operative treatment which have been used for hip-joint

osteoarthritis are reviewed. Observations on a series of 130 operations for this disease are presented. The condition was unilateral in a little over half the patients and bilateral in a little less than half. The osteoarthritis followed congenital dysplasia of the hip-joint in almost half the cases and the etiology was unknown in about one-quarter. The necessity for detailed clinical analysis of results in order to compare different operative methods is stressed and a new procedure described for registering the functional value of hip-joint mobility. The part played by the hip-joint capsule in the symptomatology of osteoarthritis of the joint is discussed.

Clinical observations indicate that the capsular involvement accompanying the osteoarthritis is important symptomatically because it is the chief cause of joint pains. The diseased capsule is also the principal source of the muscular reflexes which are responsible for reduced joint mobility, contractures and malpositions. Removal of the capsule independently or supplementary to arthroplasty relieves pain, increases mobility and prevents postoperative contractures. It should be performed before the joint ends of the bones have become so deformed as to seriously impair mobility, being chiefly indicated when the history and clinical findings indicate that the osteoarthritis followed a chronic, nonspecific synovitis. Prospects for preserving the remaining joint cartilage are better if the capsule is extirpated early.

Results obtained with the various operations for this condition are compared, patients being divided into seven groups. The first was treated by independent extirpation of the capsule. Complete relief from pain and good mobility were obtained in all cases. Arthroplasty with the vitallium cup, both with and without complete removal of the capsule was done in the second and third groups. Pain was relieved in 41.7 per cent of cases where the capsule was not removed and in 78.57 per cent when the capsule was removed. Postoperative shortening occurred in about one-third the cases, largely because of pressure atrophy of the bone. These atrophies developed most frequently when there was a previous atrophy of the joint ends and were apparently stimulated by placing the vitallium cup between them. The Smith-Petersen operation alone did not remove the source of pain but relieved pain and improved mobility as well or better than other arthroplasties when combined with complete removal of the capsule. The fourth group included 7 cases of arthroplastic resections, only 1 case having a good result. The shelf operation was used for 12 cases of dysplasia coxae and secondary osteoarthritis in the fifth group. This operation is indicated when the acetabular roof is insufficient but the femoral head is well developed and there are only slight secondary changes. All cases were improved, especially as regards pain, because the strain on the joint capsule is relieved. The sixth group included 6 acetabuloplasties. Pain was relieved in 2 cases. This is a minor operation well tolerated by the patient and chiefly indicated when the margin of the acetabulum presses on the femoral neck during joint function and a major operation is inadvisable. Arthrodesis was done on 27 patients in group 7 with relief of pain and bony

ankylosis in 88.46 per cent. Supplementary nail fixation is considered an important improvement in this operation.

The operations of arthrodesis and arthroplasty are compared. Arthrodesis gives reliable primary and more permanent results while the results of arthroplasty are variable and uncertain, especially over a long period. Good results are only obtained with arthroplasty when the necessary mechanical conditions for a satisfactorily functioning hip-joint are presumably present, whereas arthrodesis can be done for practically all forms of hip-joint osteoarthritis. Arthroplasty never gives as good a joint as the normal, is less advisable for patients who perform heavy work, and should primarily be considered for cases where arthrodesis is contraindicated. (*Such as bilateral involvement.*—ED.)

Results of surgical treatment of osteoarthritis of the hip-joint would be materially improved if the patient were referred for surgical treatment as soon as the diagnosis is made and other treatment only used when surgery is contraindicated instead of operative treatment being used as a last resort. 393 references. 11 tables. 46 figures.

(*The pain in osteoarthritis of the hip is probably primarily in the synovial membrane rather than the joint capsule; perhaps the author includes both tissue under the term "capsule". Smith-Petersen has repeatedly emphasized the importance of excising the capsule and synovial membrane with acetabuloplasty or vitallium mold arthroplasty. The atrophy of the bone in cup arthroplasty of the hip is probably due to damage to the circulation at the time of operation, rather than the presence of the cup. While the author indicates that his best results were obtained with capsulectomy alone, it must be noted that this was his most favorable group of cases and that a longer follow-up may reveal less favorable results.*—M. B. H.)

TEMPOROMANDIBULAR JOINT ARTHROSIS AND ITS TREATMENT BY EXTIRPATION OF THE DISC. A CLINICAL STUDY.

Karl Boman, Sabbatsberg Hospital, Stockholm, Sweden. Acta chir. Scandinav. 95:9-225, Suppl. 118, 1947.

The anatomy of the temporomandibular joint is reviewed and the symptoms and diagnosis of arthrosis of the joint summarized. Symptoms are local and peripheral. The former comprise snappings, crepitations, disturbances in motion and pain in the joint and are quite common. Really painful symptoms are rare. The frequency of symptoms is about the same regardless of the type of bite. There are many peripheral symptoms, chiefly headache, varying pain on the side of the affected joint and dizziness. The condition is easily diagnosed when a local symptom is pronounced but it is sometimes hard to determine which side is affected. The function of the disk in the joint is discussed.

Treatment of this condition has usually been conservative, operations for its cure being uncommon because of its benign nature and the uncertainty of surgical correction. Observations on extirpation of the disk in a

series of 58 patients are presented. An angular incision is made across the joint and sometimes extended around the ear. This is considered better than the vertical incision as there is little danger to the facial nerve and it gives an excellent cosmetic result. No permanent paresis followed extirpation of the disk. The forward motion of the condyle is considerably reduced if the entire disk is removed and the upper part of the lateral pterygoid muscle completely disconnected. Complete extirpation of the disk is usually sufficient to prevent luxations but motion can be further limited if desired by partly loosening the insertion of the lower part of the lateral pterygoid muscle.

Symptoms usually disappear a few days after removal of the disk and patients can bite off and chew food in a few days. Pain does not follow closing the jaw but continual practice in opening the mouth expedites recovery. The joint largely acts as a rotary joint for a short period postoperatively but a forward gliding movement of the condyle on the operated side develops in a week or two. After the disk is removed the lower jaw vacillates when the teeth are clenched around an object between the incisors because of gradual articular surface changes and diminished forward glide on the side operated upon. No pain in teeth or jaws had followed extirpation of the disk and local and peripheral symptoms disappear except for occasional temporary recurrence of snapping. Prophylactic dental treatment is important.

This investigation indicated that arthrosis of the temporomandibular joint should usually be treated conservatively but the disk should be extirpated if orthopedic dental treatment is impractical or symptoms severe. It gives immediate and permanent relief without seriously affecting the bite. 203 references. 9 tables. 36 figures.

References to Current Articles

Secondary Resection in Gun-shot Injuries of Large Joints (*O vtorichnykh resektsiyakh pri ognestrel'nykh povrezhdeniyakh krupnykh sustavov*). A. A. Polyantsev. Khirurgiya No. 1, 74-81, 1947. A total of 122 resections were performed mostly on infected wounds with severe impairment of bone structure (types III and V in Dietrichs' classification). Indications for operation are : (a) shoulder joint: capsular phlegmona and osteo-arthritis; the results usually good; (b) hip joint: severe or slight impairment of bone structure and moderate purulent infection; delay is dangerous; (c) knee-joint: capsular phlegmona, osteo-arthritis, etc., also severe intoxication due to acute condition. In chronic inflammations conservative treatment is sufficient and preferable; (d) elbow joint: coarse destruction of bone or osteomyelitis showing no tendency to heal; (e) ankle joint: limited impairment. When bone destruction is severe and extensive, amputation is necessary.

Immobilization with Bone Grafts in the Treatment of Tuberculosis of the Joints and Pott's Disease. Etienne Sorrel and Madame Sorrel-Dejerine, Paris, France. J. Bone & Joint Surg. 29:603-606, July 1947.

Arthrodesis of the Hip Joint in Degenerative Arthritis. A Modified One-

Stage Procedure with Internal Fixation. James A. Dickson and Leon J. Willien, Cleveland Clinic, Cleveland, Ohio. J. Bone & Joint Surg. 29: 687-96, July 1947.

Cartilage and Chondroitin Sulphate. I. The Physiological Role of Chondroitin Sulphate in Cartilage. Bengt Sylvén, Radiumhemmet, Stockholm, Sweden. J. Bone & Joint Surg. 29:745-52, July 1947.

Operative Treatment of Paralytic Genu Recurvatum. Clarence H. Heyman, Cleveland, Ohio. J. Bone & Joint Surg. 29:644-49, July 1947.

Surgical Treatment of Degenerative Arthritis of the Knee Joint. G. E. Haggart, Lahey Clinic, Boston, Mass. New England J. Med. 236:971-73, June 26, 1947.

Absorption of Trypan Blue from the Human Knee Joint. R. L. DeC. H. Saunders and E. Gordon Young, Dalhousie University, Halifax, N. S., Canada. J. Bone & Joint Surg. 29:301-304, April 1947.

Autonomic Control of Synovial-Fluid Reaction. C. I. Reed, Herman Joffee and Norman R. Joseph, University of Illinois, Chicago Colleges, Chicago, Ill. J. Bone & Joint Surg. 29:370-76, April 1947.

Arthroplasty of the Elbow by Replacement of the Distal Portion of the Humerus with an Acrylit Prosthesis. Richard H. Mellen (Major, M.C., A.U.S.) and George S. Phalen (Lt. Col., M.C., A.U.S.) O'Reilly General Hospital, Springfield, Mo. J. Bone & Joint Surg. 29:348-53, April 1947.

Tibiotarsal Arthrodesis after Astragalectomy. J. C. Carmack and Halford Hallock, New York State Reconstruction Home, West Haverstraw, N. Y. J. Bone & Joint Surg. 29:476-82, April 1947.

Calcareous Deposits in Soft Tissues About the Proximal Interphalangeal Joint of the Index Finger. Anthony F. DePalma, Jefferson Medical College, Philadelphia, Pa. J. Bone & Joint Surg. 29:808-809, July 1947.

Our Method for Reconstructing the Ligamenta Cruciata of the Knee Joint (*Nash metod vosstanovleniya krestoobraznykh svyazok kolennogo sustava*). A. M. Landa, The State Institute of Physiotherapy and The Botkin Hospital, U.S.S.R. Khirurgiya No. 2, 58-68, 1947.

Ambulatory Treatment of Hallux Valgus. Edward L. Compere and William J. Schnute, Northwestern University Medical School, Chicago, Ill. Surgery 22:545-49, September 1947.

Injuries to the Semilunar Cartilages of the Knee Joint. Marion K. King, and William S. Hotchkiss, U. S. Marine Hospital, Norfolk, Va. Am. J. Surg. 73:544-40, May 1947.

The Technique in Transarticular Nailing Arthrodesis in the Hip-Joint. Hugo Aronsson, Sabbatsberg Hospital, Stockholm, Sweden. Acta chir. Scandinav. 95:475-82, Fasc. 5, 1947.

Shoulder and Elbow Lesions Distinctive of Baseball Players. George E. Bennett, Baltimore, Md. Ann. Surg. 126:107-10, July 1947.

Anomalous Talocalcaneal Articulation. Cause for Limited Subtalar Movements. Charles J. Sutro (Lt. Col., M.C., A.U.S.), Fort Riley, Kan. Am. J. Surg. 74:64-65, July 1947.

Villonodular Plasma Cell Synovitis. Leo F. Bleyer and K. Carroll, Evanston, Ill. Am. J. Surg. 74:222-25, August 1947.

Air Arthrography of the Knee Joint. J. G. Bonnin (Lt. Col., R.A.M.C.) and J. L. Boldero (Capt., R.A.M.C.), Islip, Oxford, England. Surg., Gynec. & Obst. 85:64-70, July 1947.

XVI. Conditions Involving the Knee Joint. Ralph K. Ghormley, Mayo Foundation, Rochester, Minn. Arch. Surg. 54:668-82, June 1947.

Conditions Involving the Knee Joint. Mark B. Coventry, Mayo Foundation, Rochester, Minn. Arch. Surg. 54:682-89, June 1947.

Conditions Involving Shoulder, Neck and Jaw. Toufick Nicola, Montclair, N. J. Arch. Surg. 54:689-700, June 1947.

48. Tendons

FLEXOR-TENDON GRAFTS TO THE FINGER AND THUMB.

Walter C. Graham, Santa Barbara, Calif. J. Bone & Joint Surg. 29: 553-59, July 1947.

Observations and methods in 141 cases of flexor-tendon grafts are presented. Restoration of the tendon function is the logical treatment but restoring function to a finger without sensation is useless as the patient tends to substitute a normal finger for the grafted member and use of the finger is essential to restore tendon action. Pulleys are important for tendons but should not be cut to form a tendon sheath. Care must be exercised to prevent tendons from passing over exposed bone as adhesions will form and prevent function. A grafted tendon swells while healing. Ample room must therefore be available in the sheath, a tight sheath causing necrosis and adhesions of the graft. Flexor-tendon function cannot be restored to a badly scarred finger. Such cases are best treated by an arthrodesis at the distal interphalangeal joint and a graft which does not go beyond the middle joint. A graft should only be attempted on fingers with normally moving joints. Restoration of the flexor-tendon function is more difficult in the little finger than the others. Restoration of muscle tone is important so that the muscle can move the tendon in its sheath. The sublimus tendon is usually excised, the last two joints being controlled by the profundus tendon. If the sublimus tendon is excised too low there is a tendency to hyperextension of the proximal interphalangeal joint. This can be controlled by fixing the stump of the tendon across the joint into the proximal phalanx, the joint being held in about 10 degrees flexion. The sublimus function can be retained and the finger mechanism restored when the laceration is below the proximal interphalangeal joint by fixing the graft to the profundus tendon stump above and extending it to the distal phalanx below.

Grafts may be obtained from many sites, the tendon of the palmaris longus being the most accessible. They should be dissected in such a way that the gliding material on the tendon is also transplanted. It is important that the suture line of the graft not be between the proximal interphalangeal and the distal palmar crease. The graft may be sutured to the stump of the

profundus tendon below or to the distal phalanx where the profundus tendon was inserted. It should be above the wrist or in the base of the palm above. Scar tissue and the old tendon stump must be excised and the graft threaded through the pulleys. A muscle from another finger is often used to provide motor power for the lacerated finger, especially in old injuries. This may be done without endangering function though previous muscle exercise and training are desirable. Postoperative management to restore function is the most important part of the operation and is described. The patient must be kept encouraged and mobilization of the tendon personally supervised by the surgeon. Forcible extension may be required to prevent contractures. Stripping the tendon after six or seven weeks will often restore more function. A nonfunctioning graft may be about 90 per cent restored by blocking the median or ulnar nerve to relieve pain and promote finger flexion. 5 references. 21 figures.

FREE TENDON GRAFTS IN SECONDARY FLEXOR TENDON REPAIR.

J. William Littler, New York, N. Y. Am. J. Surg. 74:315-21, September 1947.

The objective of this operation is to restore a strong and freely gliding tendon with enough amplitude to permit the finger to be flexed through a useful range with the other fingers. The palm and fingers must be covered with skin having no scars if the best results are to be obtained from these grafts.

Operative technic and principles are described. Lateral and curved incisions are used for the fingers and palm. Smaller tendon grafts are preferred as they are more easily vascularized, are not constricted by the annular ligaments and will hypertrophy if necessary to meet functional demands. The palmaris longus or extensor tendons of the toes make excellent grafts and are easily obtained. The sublimus tendon can be withdrawn through a transverse incision at the wrist if it is to be used as a graft. The graft swells soon after operation and pressure necrosis or adhesions will occur unless there is ample room under the annular ligaments. The graft should be transplanted with intact paratenon if it is to lie on exposed bone or on a cicatricial bed, or paratenon from over the triceps tendon can be placed between the graft and bed to provide a gliding mechanism. It is important when preparing a finger for a free tendon graft that all the fibrous tendon sheath be removed except enough of the annular ligaments to prevent bowstringing. Remnants of flexor tendons are removed and only the stump of the profundus tendon is left at its insertion. Soft tissue is required for good functioning of free tendon grafts in the fingers and not the tendon sheaths.

Length of the graft must be carefully determined. It is about the proper length when the finger is held in a neutral position with the same flexor tone as the normal finger. Placing the proximal suture first and the distal

suture after the tendon has been threaded through the pulleys aids in obtaining the proper length. The amplitude of a severed tendon should be determined by traction before prolonging it with a free graft as it is useless to prolong a badly contracted flexor muscle by a graft and expect full finger flexion.

A strong proximal end to end suture and firm fixation of the graft at its insertion is essential. A Bunnell continuous No. 3 untreated silk or twisted No. 49 nylon suture is preferred for the upper junction and No. 34 stainless steel wire for the insertion. The profundus tendon should be sutured at the level of the lumbrical origin in the palm if used as a graft. The sublimus tendon of the ring finger can be severed at the first interphalangeal joint, withdrawn through a palmar incision and transferred to the little finger or the thumb to replace a profundus or a flexor pollicis longus tendon. This provides an intact tendon from muscle to insertion. Tendon grafts do not do well in fingers without sensation. This must therefore be restored by nerve suture before the grafts are placed.

Hematoma formation in the palm is prevented by careful hemostasis and a pressure dressing. The hand is immobilized in a dorsal plaster splint with the wrist, metacarpophalangeal and first interphalangeal joints each flexed about 45 degrees to obtain relaxation of the tendon. The hand is kept elevated at least forty-eight hours after operation and the dressing not changed for three weeks. Early motion is not used with free tendon grafts as adhesions do not form between an untraumatized tendon and adjacent tissues in the three weeks required for union. Sutures are removed after three weeks and passive exercises given for three or four days followed by active flexion. The metacarpophalangeal joint should be held in extension during the latter part of the fourth week transmitting the pull to the proximal interphalangeal joint. Flexion will otherwise only be obtained at the former.

In this series, 50 per cent of results were excellent, 32 per cent good and 18 per cent poor. 3 references. 12 figures.

POSTOPERATIVE RESULTS IN PRIMARY TENDON SUTURE OF THE HAND AND WRIST.

Mark B. Coventry and Norman R. Beck, Mayo Clinic and Mayo Foundation, Rochester, Minn. J. A. M. A. 135:80-82, Sept. 13, 1947.

Certain factors still prevent the best results from being obtained in the surgical repair of lacerated tendons, especially of the wrist and hand. Primary suture was done for the repair of acute lacerations of tendons of the hand and wrist in 43 patients without bone involvement who were treated within four hours after injury. Tendon grafts and secondary repairs are not included in this series. The average time after injury was one hour and forty-two minutes. Frank infection occurred in only 2 cases. Both silk and stainless steel wire sutures were used with good results. Buried sutures are preferred. The method of suture used is illustrated.

Important technical factors are emphasized. The wound must be thoroughly cleaned, tissues handled carefully and absolute hemostasis obtained. Creases should be incised and a minimal number of sutures tied with small knots used. The fibrous tendon sheath is removed and replaced by fat in apposition to the tendons. When the tendons of both the flexor digitorum sublimus and profundus are severed, only the latter should be sutured, the sublimus tendon being removed or permitted to retract. Splints should be applied and physical therapy administered. The question of splints is somewhat controversial but splinting the flexor tendons for four weeks is considered ideal. The splints should be removed as soon as integrity of the suture permits, a few to ten or twelve days and the tendon exercised through a complete range of active motion once a day. Too much motion during the healing period may cause increased adhesions.

Results were considered good when there was no disability or complaint and 75 per cent or more of normal function was obtained. Poorest results occurred with injuries of the flexor tendons in areas such as a finger or under the transverse carpal ligament where there are fibrous tendinous sheaths. Poor results were obtained in 11 of 40 cases. A detailed analysis of reasons for them is presented. Some were caused by infection, some by suture of both the sublimus and profundus flexor digitorum tendons and one because of prolonged splinting. 3 references. 1 table. 1 figure.

References to Current Articles

Tendinous Reconstruction of the Hand Following Irreparable Injury to the Peripheral Nerves and Brachial Plexus. C. A. Luckey (Major, M.C., A.U.S.) and S. R. McPherson (Capt., M.C., A.U.S.) J. Bone & Joint Surg. 29:560-81, July 1947.

Xanthoma of the Achilles Tendon. Morris S. Friedman, Chicago, Ill. J. Bone & Joint Surg. 29:760-66, July 1947.

Tendon Transfer Operation for Irreparable Paralysis of the Radial Nerve. H. Herman Young and George H. Lowe, Mayo Clinic, Rochester, Minn. Surg., Gynec. & Obst. 84:1100-1104, June 1947.

Remote Results of Primary and Secondary Tendon Sutures on Hand and Fingers (*Otdalennye rezul'taty pervichnogo i vtorichnogo shva sukhozhilii na kisti i pal'tsakh*). G. F. Nikolaev, Arkhangel'sk, U.S.S.R. Khirurgiya No. 6, 48-54, 1947.

Function of the Flexor Profundus of the Fingers in Tendon Injuries (*O funktsii glubokogo sgibatelya pal'tsev pri povrezhdenii sukhozhilii*). G. F. Nikolaev, The Arkhangel'sk Medical Institute, U.S.S.R. Khirurgiya No. 2, 81-84, 1947.

Subcutaneous Rupture of the Tendon of the Tibialis Anterior Muscle. Erik Moberg, Sahlgrenian Hospital, Gothenburg, Sweden. Acta chir. Scandinav. 95:455-60, Fasc. 5, 1947.

Anserina Bursitis, A Painful Condition of the Knee (Cystic Hygroma of Horseman). Henry W. Meyerding and Jesse P. Chapman, Mayo Clinic, Rochester, Minn. S. Clin. North America 27:987-94, August 1947.

49. Amputations

AMPUTATION OF THE INDEX RAY.

James H. Mahoney (Capt., M.C., A.U.S.), George S. Phalen(Lt. Col., M.C., A.U.S.) and William H. Frackleton (Col., M.C., A.U.S.). William Beaumont General Hospital, El Paso, Tex. Surgery 21:911-18, June 1947.

Salvaging all or part of an injured index finger, especially if it must be amputated at any point proximal to the proximal interphalangeal joint, may often result in a loss of efficiency in the use of the hand. A type of operative procedure and its indications are decribed whereby an amputation of the index ray (index finger together with the second metacarpal bone) has resulted in a restoration of almost normal function in the injured hand. Several case reports are presented illustrating the type of patient for whom an index ray amputation is indicated. Such amputation is recommended only in patients with normal, or nearly normal, function in the remaining digits of the hand, and these cases fall into two groups: patients with the index finger amputated proximal to the proximal interphalangeal joint, and patients with an index finger so badly damaged as to make it unamenable to reconstructive surgery. An index ray amputation consists of an incision made about the base of the index finger and then extended longitudinally on the dorsum of the hand to the base of the second metacarpal. The second metacarpal is exposed subperiosteally and osteotomized just distal to its base. Since it is desirable to preserve the insertion of the extensor carpi radialis longus tendon, the base of this bone is not removed. While the insertion of the tendon of the first dorsal interosseus muscle into the tendon of the second dorsal interosseus muscle does not materially increase the range of abduction in the long finger, it does increase the power of the long finger to resist pressure from the thumb. Carefully isolated, the digital nerves are ligated and buried to prevent the formation of painful neuromas. In order to increase the flexion power of the long finger, though the clinical results of the procedure are difficult to evaluate, a small separate transverse incision is made at the wrist, through which the flexor tendons of the index finger may be withdrawn and transferred into the flexor tendons of the long finger. Experience has indicated that the index ray amputation results in an increased dexterity which compensates for the slight diminution in breadth of the palm. 3 references. 6 figures.

References to Current Articles

A Prosthesis for Carpometacarpal Amputations. Thomas John Canty (Comdr., M.C., U.S.N.), Mare Island Naval Hospital, Mare Island, Calif. J. Bone & Joint Surg. 29:801-804, July 1947.

Radical Amputations of the Extremities in the Treatment of Cancer. George T. Pack and Fernando de C. Genth, Memorial Hospital for Cancer and Allied Diseases, New York, N. Y. Surg., Gynec. & Obst. 84:1105-16, June 1947.

The Functions and Activities of the Committee on Artificial Limbs of the National Research Council. Paul S. Klopsteg, Evanston, Ill. J. Bone & Joint Surg. 29:538-40, April 1947.

A Case of Bilateral Syme's Amputation. L. H. Cane, Tanganyika Territory, Africa. Brit. M. J. 4518:211, Aug. 9, 1947.

Amputation Lessons from the War. Henry H. Kessler, Newark, N. J. Am. J. Surg. 74:307-14, September 1947.

50. Traumatic Surgery

References to Current Articles

Accidents in Childhood. J. Hindmarsh, G. Melin and K. Melin, The Crown Princess Lovisa's Hospital, Stockholm, Sweden. Acta chir. Scandinav. 94:483-514, No. 6, 1946. Statistical study of 5,083 cases showed higher incidence among boys as compared with the girls' group. Mortality was very low (22 cases). Burns were the most frequent injury, contusions and fractures next. The author concludes that prognosis in childhood is good. However, the nervous shock experienced during accident often proves a real danger. In infancy and early childhood the accidents may be attributed chiefly to lack of care or negligence in supervision. 26 references. 5 tables. 8 figures.

The Changing Outlook in Surgery as a Result of Chemotherapy. I: Traumatic and Reparative Surgery. D. Officer Brown, Sydney, Australia. Australian & New Zealand J. Surg. 16:262-70, April 1947.

Some Problems of Restorative Surgery (*O nekotorykh voprosakh vosstanovitel'noi khirurgii*). M. O. Fridland. Khirurgiya No. 6, 23-29, 1947.

Survey of Traumatic Surgery. John J. Moorhead, New York, N. Y. Am. J. Surg., 74:233-40, September 1947.

Caution in Handling the Extensively Injured. Robert H. Kennedy, New York, N. Y. Am. J. Surg. 74:241-45, September 1947.

51. Burns

PRIMARY BURN SHOCK (*Pervichnyĭ ozhogovyĭ shok*).

I. A. Mukhin, The First Lenin Medical Institute of Moscow, U.S.S.R. Khirurgiya No. 5, 30-40, 1947.

The purpose of this study was to establish the true cause of the primary shock following a burn. Two series of experiments were carried out on dogs: (1) without narcosis; (2) under hexenal narcosis (2 per cent solution dropwise, into the jugular vein). In both series the intensity of the shock was expected to be the same, assuming that it was caused by the effect upon the body of the toxic products formed during the burn. Actually the intoxication hypothesis was not confirmed. The shock was observed in all cases where burns were produced without narcosis. In both series the burns lasted four to five minutes. At the moment when the burn was effected the

blood pressure rose sharply in series I (no narcosis), while the pulse fell at first, then gradually rose. The breathing rate also rose at once, producing hyperventilation. In the majority of animals it gradually decreased, while in some it remained high. The fall of the blood pressure, as the shock set in, occurred forty to sixty minutes after the burn, from a maximum of 180 to 250 mm. down to a minimum of 20 to 80 mm. Adrenaline injections restored the blood pressure to normal (115 to 140 mm.) within ten to thirty seconds. However, this reaction was a temporary one. The blood pressure soon dropped again, although all dogs were saved but 1.

The breathing rate at the beginning of the shock was in most cases close to normal; in the rest of the animals it was slow. Adrenaline injections produced a rise in all dogs but 2. The pulse became so rapid that it could not be counted, except in 1 dog (117 to 228). In the latter case the pulse did not change and the breathing rate fell. The animal died.

The burns produced under narcosis caused a relatively slight rise of the blood pressure in all but 1 dog, in which case it decreased by 20 mm. The pulse rate rose somewhat in all but 1 animal; the latter showed no change. The breathing rate rose in 2 cases, fell in 1, and remained unchanged in 1 dog. The fall of the blood pressure took place twenty to thirty minutes following the burn. It was gradual, reaching the minimum forty-five to sixty minutes after the burn. Fluctuations from a maximum of 121 to 140 mm. down to a minimum of 62 to 97 mm. were recorded. Adrenaline injections produced a rise to normal or slightly above. The breathing rate remained unchanged sixty minutes after the burn in 2 cases, fell slightly in 1 case, and rose somewhat in 1 case. The pulse rate remained without change in 2 animals, rose in 1 and fell in 1 case. Thus, the true shock did not occur in the presence of narcosis.

Introduction of adrenaline increased the pulse rate in one dog from a minimum of 72 to a maximum of 228 per minute. In another animal the rapid pulse fell to normal, and in the 2 other dogs it remained unchanged, at a normal rate, throughout the experiment. In 1 dog the normal pulse (before and after the burn) suddenly dropped from 144 to 72 per minute after adrenaline injection. The breathing rate was slightly lowered by adrenaline in 2 dogs, rose nearly to normal in 1 dog, and dropped to zero in the other.

An additional series of experiments was done to determine the circulating blood volume before, during and after the burn (thirty, forty-five and sixty minutes later). The determination was done by the Congo Red method (1 per cent solution). The blood was treated with sodium oxalate to prevent weight. The results show that burns without narcosis produce a sharp decline in the blood volume which parallels the drop of blood pressure. The animals under narcosis, on the contrary, exhibited only slight decrease in blood pressure. In group I the average drop immediately after the burn amounted to 17.6 per cent. This decrease in volume was due to the escape of plasma into the tissues and stasis of blood in the veins, as well as in the blood depots. To ascertain which of these factors was the most important, experiments were

conducted on the contractile capacity of the spleen, as affected by the burn. The Bykov method was used, in which the spleen is carried outside and placed under the skin. The animals were anesthetized under ether and ten days after operation the experiments were performed.

It was found that during the burn intense contractions of the spleen take place, but the shock dilation and weakening of this organ is noted instead. No contractions were recorded in thirty to forty minutes after the beginning of shock. The contractile capacity was gradually restored. During the contraction of the spleen the blood pressure dropped slightly (dilation of the blood vessels). Thus, the dilation factor is strong during the dilation, the volume gained being greater than the volume of blood lost by the spleen. During the shock, in the absence of contractions, the spleen retains a large volume of blood which does not participate in circulation. This accounts partly for the pronounced drop in blood volume during the shock.

WOUND HEALING STUDIES ON SEVERAL SUBSTANCES RECOMMENDED FOR THE TREATMENT OF BURNS.

Brock E. Brush, Conrad R. Lam and Joseph L. Ponka, Henry Ford Hospital, Detroit, Mich. Surgery 21:662-67, May 1947.

A study of the effect of various substances recommended for the treatment of burns was made on experimental animals (guinea pigs), using a procedure essentially the same as that described by Carrel and Hartman. With the animal under ether anesthesia, two circular cutaneous wounds of the same size were made on the abdomen, one on each side of midline. The substance to be tested was applied to one wound (on the left side) and both wounds were covered with sterile gauze held in place with adhesive tape. Dressings were changed every two days and at each dressing the test substance was applied to the wound on the left side. The size of the wound was measured and recorded at each dressing. Twelve guinea pigs were used for each test substance.

The substances tested included tannic acid in solution and in jelly (two preparations); petrolatum gauze, two types of carbowax ointment, stearate grease (aluminum monostearate in mineral oil), proflavine dihydrochloride (1:1,000) hydrosulphosol solution and biodyne ointment. It was found that the tanic acid preparations both solution and jellies, markedly delayed healing. Proflavine dihydrochloride and hydrosulphosol caused some delay in healing in the majority of the test animals, and are considered to be "moderately inhibitory." The two carbowax preparations and biodyne ointment caused slight delay in healing in half the animals used in each test. Petrolatum gauze and stearate ointment caused no delay in healing, but also did not accelerate healing, as compared with the control wounds. 17 references. 3 tables. 4 figures.

FROSTBITE.

Kurt Lange, David Weiner and Linn J. Boyd. New York Medical College, Fower and Fifth Avenue Hospitals, and the Research Unit, Metropolitan Hospital, New York, N. Y. New England J. Med. 237:383-89, Sept. 11, 1947.

The physiology, pathology and treatment of frostbite are discussed. Exposure to subzero temperatures in dry surroundings causes frostbite which may be followed by gangrene and even death from shock. It occurs frequently in both military and civilian life being especially common in connection with high-altitude flying. A marked increase occurs in capillary permeability after exposure to cold. This is followed by a rapid loss of plasma. The red cells gather in irregular masses with plasma between just before freezing until the circulation stops. The plasma in blisters and interstitial spaces forms a heavy deposit of fibrin. Experiments showed that untreated exposure was followed by gangrene but this was prevented by immediate heparinization lasting six days. Room temperature was found best as both cooling or warming to 44 C. for twenty-four hours after exposure made the lesion worse. Heparinization was showed to keep the plasma which leaked into the interstitial spaces liquid and resorbable. Damage to motor and sensory nerves was not altogether avoided by heparinization. Different individuals vary considerably in their reaction to freezing but each person is rather constant.

Heparinization was done by giving about 300 mg. of heparin in 2,000 cc. of normal saline solution every twenty-four hours at 20 to 25 drops per minute. This treatment was used for 2 cases of frostbite with severe hemorrhagic blistering. Heparinization was begun six and ten hours after exposure and continued for seven and five days respectively. Similar precautions to those used in burn cases were taken, sterile wet penicillin dressings being applied to the blistered areas. There was no loss of tissue except nails. It cannot be said that gangrene would have occurred without this treatment but experience indicates that such was the case. 17 references. 7 figures.

(*Time will tell whether heparin is a really practical contribution to the therapy of frostbite.*—ED).

References to Current Articles

A New Eschar Technique for Local Treatment of Burns. Clyde H. Chase, Harper Hospital, Detroit, Mich. Surg., Gynec. & Obst. 85:308-14, September 1947. Describes the use of protein extract of beef aorta in saline solution or in a salve (to which antiseptics may be added) for the local treatment of burns. Discusses advantages of this method. Reports its use in over 500 ambulatory burned patients with good results. 38 references. 3 figures.

Addison's Disease Associated with Amyloidosis Following Thermal Burns. Report of a Case. S. M. Leverson, H. J. Tagnon, W. L. Goodpastor,

R. W. Green, F. H. L. Taylor and C. C. Lund, Harvard Medical School and Boston City Hospital, Boston, Mass. New England J. Med. 237: 152-56, July 31, 1947.

The Primary Treatment of Extensive Burns. A Clinical Study. Hugo Rosenquist, St. Goran Hospital, Stockholm, Sweden. Acta. chir. Scandinav. 95:133 pp., Suppl. 124, 1947.

Studies on Frost-bite with Special Reference to Treatment and the Effect on Minute Blood Vessels. Ramon Quintanilla, Frank H. Krusen and Hiram E. Essex, Mayo Clinic and Mayo Foundation, Rochester, Minn. Am. J. Physiol. 149:149-61, April 1947.

Present Concepts Concerning the Care of the Burned Patient. William E. Abbott, Detroit, Mich. and John Winslow Hirshfeld, Ithaca, N. Y. Am. J. Surg. 74:296-301, September 1947.

The Care of Burned People. Leonard Colebrook, Medical Research Council's Burns Unit, Accident Hospital, Birmingham, England. Lancet 2: 217, Aug. 9, 1947.

Infected Burns. Harold Cunningham Smith (Major, M.C., A.U.S.), Kingston, Pa. Am. J. Surg. 74:216-21, August 1947.

Effects of Certain Diets on the Loss of Nitrogen in Urine After Experimental Burns. E. A. Sellers and C. H. Best, University of Toronto, Toronto, Ont., Canada. Brit. M. J. 4502:522-44, Apr. 26, 1947.

Surgical Treatment of Burns. Use of Pressure Dressings. Neal Owens, New Orleans, La. Plast. & Reconstruct. Surg. 2:226-33, May 1947.

Chemical Burns of the Human Cornea. Ralph S. McLaughlin, Charleston, W. Va. Am. J. Surg. 74:373-77, September 1947.

52. Shock

References to Current Articles

A Study of Systolic Blood Pressure and Pulse Rate in Traumatic Shock. J. D. Stewart, Paul A. Kennedy and Harry W. Hale, Jr., University of Buffalo Medical School, Buffalo, N. Y. Surg., Gynec. & Obst. 85: 453-55, October 1947. Reports a study of systolic blood pressure and pulse rate in 204 seriously wounded soldiers in forward field hospitals with a discussion of the importance of these two factors in evaluating traumatic shock. 2 references. 5 tables. 1 figure (chart).

Body Temperature and Oxygen Consumption in Traumatic Shock and Hemorrhage in Mice. Herbert Tabor and Sanford M. Rosenthal, National Institute of Health, Bethesda, Md. Am. J. Physiol. 149:449-64, May 1947.

Disturbances in the Chemistry and in the Acid-Base Balance of the Blood of Dogs in Hemorrhagic and Traumatic Shock. W. S. Root, J. B. Allison, W. H. Cole, J. H. Holmes, W. W. Walcott and M. J. Gregersen, College of Physicians and Surgeons, Columbia University, New York, N.Y. Am. J. Physiol. 149:52-63, April 1947.

The Relationship Between Traumatic Shock and the Release of Adenylic Acid Compounds. Herman M. Kalckar and Oliver H. Lowry, The

Public Health Research Institute of the City of New York, Inc., New York, N. Y. Am. J. Physiol. 49:240-45, April 1947.

The Estimation of Acute Blood Loss by the Tilt Test. D. M. Green and David Metheny, University of Washington School of Medicine, and the King County Hospital, Seattle, Wash. Surg., Gynec. & Obst. 84:1045-50, June 1947.

Chronic Shock. The Problem of Reduced Blood Volume in the Chronically Ill Patient. John H. Clark, Woodrow Nelson, Champ Lyons, H. S. Matterson and Paul DeCamp, Tulane University School of Medicine and Alton Ochsner Medical Foundation, New Orleans, La. Ann. Surg. 125:618-46, May 1947.

The Cause of Postoperative Shock. A. R. Hunter, Manchester Royal Infirmary, Manchester, England. Lancet 2:162-64, Aug. 2, 1947. 27 references. 3 tables.

The Treatment of Shock by Aortic Transfusion During Thoracic Operations. Earle B. Kay and Vernon D. Hacker, Cleveland, Ohio. J.A.M.A. 134: 604-605, June 14, 1947.

An Analysis of Changes in the Contour of the Femoral Arterial Pulse During Hemorrhagic Shock. Robert S. Alexander and Edward A. Webb, Western Reserve University Medical School, Cleveland, Ohio. Am. J. Physiol. 150:272-91, August 1947.

Blood-borne Vasotropic Substances in Experimental Shock. Robert Chambers and R. W. Zweifach, New York University, New York, N. Y. Am. J. Physiol. 150:239-52, August 1947.

Changes in Plasma Volume and Mean Arterial Pressure After the Intravenous Injection of Concentrated Human Serum Albumin in Thirty-Eight Patients with Oligemia and Hypotension. Alice Lowell, Andre Cournand and Dickinson W. Richards, Jr., College of Physicians and Surgeons, Columbia University, New York, N. Y. Surgery 22:442-52, September 1947.

The Role of the Mesenteric Circulation in the Irreversibility of Hemorrhagic Shock. Ewald E. Selkurt, Robert S. Alexander and Mary B. Patterson, Western Reserve University Medical School, Cleveland, Ohio. Am. J. Physiol. 149:732-43, June 1947.

Artificial Circulation Produced by Rocking. Its Use in Drowning and Anaesthetic Emergencies. F. C. Eve, Royal Infirmary, Hull, England. Brit. M. J. 4520:295-96, Aug. 23, 1947.

Copper Sulfate Method for Rapid Estimation of Whole Blood Requirements. Joseph C. Edwards, Washington University Medical School, St. Louis, Mo. Arch. Surg. 55:1-12, July 1947.

Traumatized Muscle Tissue as a Factor in the Production of Shock. Edward C. Mason and D. L. Richardson, University of Oklahoma School of Medicine, Oklahoma City, Okla. Surg., Gynec. & Obst. 85:71-74, July 1947.

The Measurement of Hemorrhage. D. M. Green, King County Medical Society, Seattle, Wash. Northwest Med. 46:517-19, July 1947.

53. Transfusions

References to Current Articles

Physical Basis of Continuous Intravenous Infusions. J. N. Walton. Royal Victoria Infirmary, Newcastle-on-Tyne, England. Lancet 1:662-65, May 17, 1947. In the administration of intravenous fluids, the capricious behavior of the drip may be a matter of life or death to the patient. Experiments are described which prove that this behavior is caused by the essential nature of the apparatus used and by variable factors arising in the patient. The practical applications in the hospital are briefly considered. 3 references. 4 tables. 3 figures.

Elliptocyte Transfusions as a Method in Studies on Blood Destruction, Blood Volume, and Peritoneal Resorption. Sture Hedenstedt, University of Upsala, Upsala, Sweden. Acta. chir. Scandinav. 95:5-141, Suppl. 128, 1947.

Blood Plasma. Howard E. Snyder. Surg., Gynec. & Obst. 84:1125-27, June 1947.

Clinical Evaluation of Bovine Serum Albumin as a Blood Substitute. David State, Felipe Torres Romero, Manuel Moreno Castellanos and Owen H. Wangensteen, University of Minnesota Medical School, Mineapolis, Minn. Surgery 22:424-41, September 1947.

Denatured Calf Plasma for Transfusion. J. Melka, V. Rapant and B. Zapletal, Palacky University, Olomonc, Szechoslovakia. Lancet 2:382-83, Sept. 13, 1947.

Experiences of an Army Doctor in the European Theatre of War. Elliott C. Cutler, Harvard University, Boston, Mass. Am. J. Surg. 73:637-50, June 1947.

Peritoneal Irrigation for Uremia Following Incompatible Blood Transfusion. Report of a Case. E. E. Muirhead, A. B. Small and R. B. McBride, Baylor University Hospital, Dallas, Tex. Arch. Surg. 54:374-81, April 1947.

Gelatin as a Plasma Substitute. John S. Lockwood. Surg., Gynec. & Obst. 85:114-16, July 1947.

54. Wounds

References to Current Articles

Biochemistry of Inflammation. Valy Menkin, Temple University, Philadelphia, Pa. Lancet 1:660-62, May 17, 1947. When tissues are injured they liberate into the inflammatory exudate many chemical compounds which are at the basis of the clinical features of the inflammation. One substance, leukotaxine, increases local capillary permeability and leukocyte movement. A leukocytosis-promoting factor discharges immature leukocytes from a hyperplastic bone marrow. Necrosin exerts a necrotic effect on cells. Pyrexin causes fever. A leukopenic factor causes leukopenia. 26 references.

Cytology of the Wound Secretion (*Tsitologiya ranevogo sekreta*). Z. N. Katsnel'son, The First Lenin Medical Institute of Moscow, U.S.S.R. Khirurgiya No. 5, 22-30, 1947.

Treatment of Snake Bites. Evaluation of Various Methods (*Sravnitel'naya otsenka nekotorykh metodov lecheniya zmeinykh ukusov*). G. A. Taubes, The Kuzedeev District Hospital, Kemerov Region, U.S.S.R. Khirurgiya No. 3, 43-46, 1947.

Tissue Therapy of Indolent Wounds. Preliminary Communication. (*Tkanevaya terapiya dlitel'no nezazhivayushchikh ran*). L. S. Khavkin, The Ivanovo Medical Institute, U.S.S.R. Khirurgiya No. 3, 32-37, 1947.

Penetration by Foreign Bodies in the Absence of the "Entrance Gates" (*Ob inorodnykh telakh bez "vkhodnykh vorot"*). A. I. Mikhel'son, The Regional Reconstruction Hospital, Bashkiriya, U.S.S.R. Khirurgiya No. 3, 78, 1947.

Treatment of Slow-Healing Leg Wounds by Intraarterial Administration of Novocaine or of Incompatible Blood. Preliminary Communication. (*Lechenie vyalo zazhivayushchikh ran goleni vnutriarterial'nym vvedenien novokania ili nesovmestimoĭ krovi. Predaritel'noe soobshchenie*). A. N. Spirodonov and I. Ya. Domentiĭ, Hospital Administration Center V.Ts.S.P.S., U.S.S.R. Khirurgiya No. 6, 35-41, 1947.

Treatment of Functional Disorders in the Hand and Fingers Following Gunshot Wounds (*Lechenie funktsional'nykh rasstroistv kisti i pal'tsev pasle ognestrel'nykh raneniĭ*). D. K. Yazykov, The Central Institute for Advanced Training of Physicians, U.S.S.R. Khirurgiya No. 3, 62-72, 1947.

Plastic Surgery in Acute Trauma. J. Huber Wagner, Pittsburgh, Pa. Am. J. Surg. 74:322-27, September 1947.

Antibiotics in the Surgery of Trauma. Conrad R. Lam, Detroit, Mich. Am. J. Surg. 74:302-306, September 1947.

The Reparative Surgery of Soft Part Wounds. Samuel P. Harbison, Pittsburgh, Pa. Surgery 22:347-59, August 1947.

Wound Closure Without the Use of Grafts. Thomas O. Otto, Miami, Fla. Ann. Surg. 125:778-87, June 1947.

Multiple Injuries Due to Tornado. L. B. Otken, Greenwood Leflore Hospital, Greenwood, Miss. Am. J. Surg. 73:717-19, June 1947.

Traumatic Uraemia. Recovery. J. C. Scott and C. G. Rob, Radcliffe Infirmary, Oxford, England. Brit. M. J. 4502:529-30, Apr. 19, 1947.

Surgical Emphysema Due to Compressed Air. A. M. Desmond. Brit. M. J. 4510:842-43, June 14, 1947.

Digital Foreign Bodies in Spot-Welders. W. A. Reynard, Pressed Steel Co., Ltd., Cowley, Oxford, and Frederick Smith, Accident Service, Radcliffe Infirmary, Oxford, England. Brit. M. J. 4510:843-47, June 14, 1947.

Surgical Management of Extremity Wounds. Donald B. Slocum, Central Willamette Medical Society, Eugene, Ore. Northwest Med. 46:594-97, August 1947.

55. Military Surgery

References to Current Articles

R. R. Vreden and his Role in the Development of Field Surgery (*Rol' R. R. Vredena v razvitii voenno-polevoĭ khirurgii*). M. I. Kuslik, Leningrad, U.S.S.R. Khirurgiya No. 4, 3-10, 1947.

Pirogov's Doctrine of the Army Field Surgery in the Light of Modern Science (*Voenno-polevaya khirurgicheskaya doktrina N. I. Pirogova v svete sovremennosti*). S. A. Yakobson, The Ivanovo Medical Institute, U.S.S.R. Khirurgiya No. 2, 5-26, 1947.

Surgery in Two Wars. Philip H. Matchiner. Brit. M. J. 4518:219-20, Aug. 9, 1947.

56. Experimental Surgery

See Contents for Related Articles

57. Miscellaneous

THE EDUCATION OF THE SURGEON.

Elliott C. Cutler, Harvard Medical School, Boston, Mass. New England J. Med. 237:466-70, Sept. 25, 1947.

Surgical education in former years is reviewed. The rotating internship is considered inadvisable in educating a surgeon as equally valuable experience is available in the fourth year course of a first class medical school. Much better results are obtained under a single chief surgeon as a teacher than by frequently changing hospitals. The young surgeon must learn his handicraft by careful teaching until he reaches the point where he is given surgical responsibility and permitted to operate independently. An internship should occur about eighteen months and should be a graduated system of increasing responsibility. This should be followed by two years as assistant resident with four month periods in the branches of general surgery and gynecology and with much time on the general surgical wards.

The next step should be a year in a laboratory where for the first time he begins to think independently. This period is considered the time when exceptional, good, indifferent or bad young surgeons really become differenti-

ated. The aspiring surgeon is frequently downcast at the change from a busy surgical existence to the loneliness of a laboratory but this is considered a vital point in his career. After he has learned to stand on his own feet, go to the library and read books, and really learned to think out a problem, he becomes a changed man.

The surgeon is well trained after four and a half years, having acquired surgical technic and learned how to think. The product is not yet fully complete but the young surgeon will do well anywhere with this training. The exceptional man is chosen by the chief surgeon as his resident at the hospital. The resident is the finished product in surgical education. After a year or two of this work, he leaves to continue his work elsewhere.

THE OPERATIVE TREATMENT OF DECUBITUS ULCER.

Edward J. Croce and Charles H. C. Beakes (Major, M.C., A.U.S.), Halloran General Hospital, Staten Island, N. Y. New England J. Med. 237: 141-41, July 31, 1947.

Experience has now shown that operative closure of large decubitus ulcers in young paraplegic patients is advantageous. Results obtained by this treatment for decubitus ulcers in 130 paraplegic patients are presented and important technical details described. This series includes 62 cases of sacral ulcers, 49 of trochanteric ulcers and 9 ulcers of the ischial tuberosity.

The object of this treatment is to obtain early, stable and complete closure. Early closure could be obtained with split thickness grafts but the end results were frequently unsatisfactory because there was only a thin layer of fibrous tissue between the graft and the underlying bone. Injury to the denervated skin frequently caused new ulcers in the graft. The patients are usually greatly debilitated and must be sufficiently restored to enable them to withstand the operation. This is accomplished by controlling local infection, by systemic and local chemotherapy, forced feeding, amino acids parenterally if necessary and blood transfusions if required for anemia. A temporary split-thickness graft was sometimes applied when active cellulitis and necrosis had stopped and healthy granulations appeared in order to aid the patient in his preparation for the major procedure.

The ulcer was considered ready for operation when it had a healthy granulating surface without cellulitis, when all necrotic tissue had separated, exudation stopped and the margins showed evidence of proliferating epithelium. Endotracheal ether was almost exclusively used for anesthesia as it was considered safer for a prone patient. Sharp dissection, removal of all scar tissue, development of large enough flaps to permit closure without tension, free irrigation with normal saline solution before closure, dusting with plasma-penicillin powder and use of a pressure dressing for several days postoperatively are emphasized.

These ulcers usually occurred in the sacral region. Sliding, full-thickness flaps were used in 38 of 42 cases, split-thickness grafts being used in 4 cases for special reasons. The ulcers varied in shape but were usually

transversely oval and the average size was 14 by 10 cm. There were few complications and only one wound infection. This occurred when absorbable gauze was used for hemostasis. It acted as a foreign body and the infection promptly subsided after its removal. Absorbable gauze is not condemned but is not considered suitable for use immediately beneath a suture line and especially when there is a subcutaneous bony prominence.

Trochanteric ulcers are more difficult to close because the skin is tight over the hip and the fascia lata has been so worn away by the trochanter that an extensive subcutaneous defect is produced. They are usually vertically oval in shape. The operations used are elliptical excision with linear closure and single or double sliding flaps. Ample anterior and posterior flaps which can be approximated without undue tension are necessary for linear closure. The best single flap is a sliding semicircular flap brought over from the near buttock. With double sliding flaps, another semicircular flap is developed anteriorly and superiorly from the front of the thigh.

Ischial ulcers are usually treated by elliptical excision and linear closure. Complete immobilization is essential postoperatively and provided by a well padded plaster spica bandage. 3 references. 8 figures.

References to Current Articles

The Mortality of Surgical Disease. Edwin P. Lehman and Walter F. Becker, University of Virginia School of Medicine, Charlottesville, Va. Ann. Surg. 125:515-21, May 1947.

The Training of Surgeons. (*O podgotovke khirurgov*). I. G. Kochergin. Khirurgiya, No. 1, 3-12, 1947. Detailed discussion of the curriculum for intensified training of surgeons.

A. L. Polnov and Soviet Surgery. The 50th Aniversary of Medical, Scientific, Pedagoical and Social Work. (*A. L. Plenov i sovetskaya khirurgiya. K 50-Letiyu vrachebnoĭ, nauchnoĭ, pedagogicheshoĭ i obshchestvenoĭ deyatel'nosti*). I. S. Babchin, Leningrad, U.S.S.R. Khirurgiya No. 3, 83-86, 1947.

Russian Surgical Literature. Outline of History (*Ocherki istorii russkoĭ Khirurgicheskoĭ Literatury*). A. M. Zabludouskiĭ, Leningrad, U.S.S.R. Khirurgiya No. 6, 3-10, 1947.

A Few More Words on Treatment of Some Surgical Diseases by the Vishnevskii Method (*Eshche neskol'ko slov k lecheniyu nekotoryhk hirurgicheskikh zabolevanii po sposobu A. V. Vishnevskogo*). A. M. Zabludovsiĭ, U.S.S.R. Khirurgiya No. 3, 52-54, 1947.

Training of Surgeons (*O podgotovke khirurgov*). A. M. Aminev, U.S.S.R. Khirurgiya No 3, 76-77, 1947

Petr Aleksandrovich Gertsen (Biographical sketch and review of achievements in surgery). E. L. Berezov and A. I. Kozhevnikov, U.S.S.R. Khirurgiya No. 2, 27-34, 1947

Congenital Dermal (Pilonidal) Sinus With Dural Connection. Case Report and Discussion. Eugene E. Clifton (Major, M.C., A.U.S.), John R.

Rydell (Lt., M.C., A.U.S.), Army and Navy General Hospital, Hot Springs National Park, Ark. J. Neurosurg. 4:276-81, May 1947.

A Method of Statistical Analysis. William A. Cooper, New York, N. Y. Surgery 22:367-79, August 1947.

The Responsibility of the University Surgeon. Elliott C. Cutler, Boston, Mass. Surgery 22:161-64, August 1947.

Does Medical Insurance Endanger the Resident System of Training Surgeons? Herman E. Pearse, Rochester, N. Y. Surgery 22:165-68, August 1947.

Surgery of the Endocrine Glands. Frederick A. Bothe, Presbyterian Hospital, New York, N. Y. Surg., Gynec. & Obst. 85:228-30, August 1947.

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